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Eleventh Year of Publication
and Faithful Service to the American Aviation Industry

JULY, 1944 VOL. XXII, NO. 1

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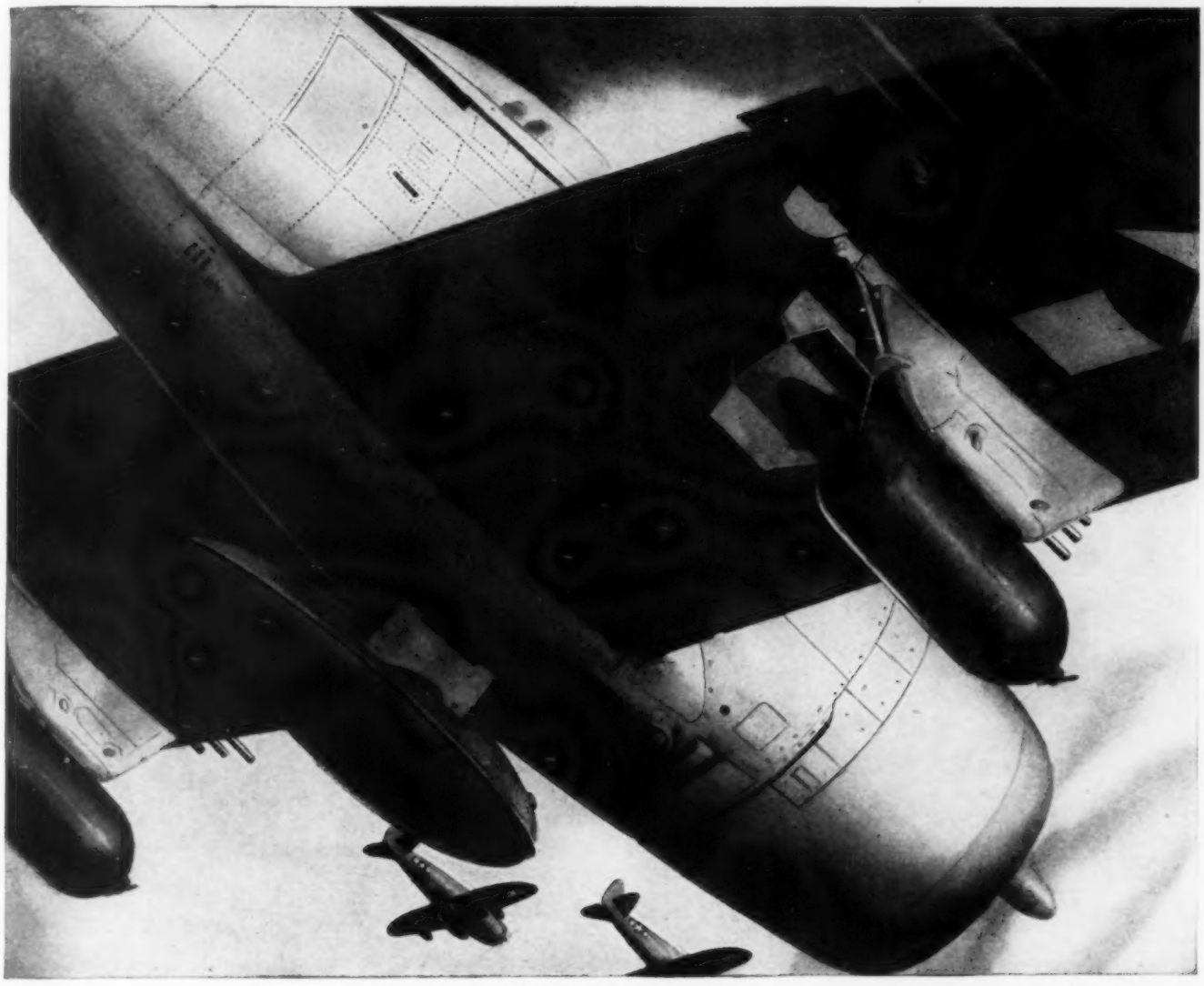

When a Thunderbolt strikes . . . anything can happen

A THUNDERBOLT roars over the Channel. Calais coming up! An ack-ack gun barks in German from a flak tower. But not for long. Eight 50-caliber machine guns ram hot steel down its throat.

Work to be done upstairs? A flight of Thunderbolts swoops down from high heaven to scatter a cloud of ME's harrying Fortresses on bombing runs over Berlin.

Work to be done on the "deck"? Two earth-quaking bombs slip from beneath a diving Thunderbolt's wings at tree-top level. A bridge blows up . . . and with it the last chance of Nazi reserves to reach the invasion front.

Flown by the finest pilots in the world, the Thunderbolt comes alive. When it strikes, high or low, anything can happen. Guided by skilled hands, it's a fighter that *does everything*. And when hundreds of them strike, everything *does* happen.

The newest Republic P-47 Thunderbolt, with bubble canopy, gives a pilot around-the-clock vision. With hundreds more "emergency" horsepower, he makes and breaks contact with the enemy at will. New propellers add 400 feet per minute to his climb. With a doubled radius of action, the protection of the Thunderbolt's devastating fire power permits heavy bombers a deeper penetration into enemy territory.

Stratosphere fighter, long distance escort, dive bomber, ground strafer—the Republic P-47 Thunderbolt is a busy plane these invasion days.

Republic Aviation Corporation, Farmingdale, Long Island, New York, and *Evansville, Indiana.*

Republic *firsts* in war point to *firsts* in peace

REPUBLIC AVIATION
CORPORATION
Specialists in High-speed, High-altitude Aircraft

The Birdmen's Perch

"HEAR you're a hero," we said brightly to a Navy friend.

"Whoa!" he snarled. "Flaps down!

"I've been flying SBD's," he went on.

AND HE SHOOTS NEAT FROM THE GUNNER'S SEAT, OF A DIVE-BOMBER BUILT FOR TWO

"That's a *two*-man ship, see? And the laddie in the rear seat did more hero-ing in any given ten minutes than I did in my whole tour, see? What are you writing?"

"What you're saying," we said meekly:

"Good! It's about time somebody besides the pilots realized how good these boys are. Why, there was one of them on Guadal who'd done almost 2100 hours of combat flying! And don't think they just sit back there squirting their guns. My man spent about 99% of his time handling communications and keeping me posted on the situation behind, beneath, and around us. But when he *did* use those guns, it was mighty comforting to be in *back* of them!

"They get extra flight pay, of course, but don't think that's why they volunteer. They ask for rear-gunner duty because they want to be where things are going on, and the hind seat of a Navy plane is it!

"Any time you see a fella wearing Aircrewman's wings and sporting a winged machine gun on his sleeve, take that greasy helmet off to him, Al. He's the guy who's responsible for certain uninformed people calling me a hero," he said sternly.

Our "Thank you," was weak.

IT TAKES 21 MONTHS — AND A LOT OF YOUR WAR BONDS — TO PUT THESE ON A MAN!

Major Al Williams,

alias "Tattered Wing Tips," Gulf Aviation Products Manager, Gulf Bldg., Pittsburgh 30, Pa.

★ ★ ★ ★ ★

INSIDE STORY

Ever see the crate for a 3-bladed propeller?

Ugly thing!

But you pry the boards off, and remove the packing material and what happens?

You see one of the most delicately balanced, beautifully made, precise examples of machinecraft ever fashioned. Tough enough to take a 2000 h.p. beating, too!

Ever see crude oil?

Ugly stuff!

But you pry the non-lubricating particles away, remove the carbon-and-sludge-forming elements with conventional refining methods and then with Gulf's famous Alchlor Process, and what happens?

You see one of the most delicately balanced, beautifully refined, precise examples of lubrication-craft ever fashioned . . . Gulfpride Oil!

Tough enough to take a 2000 h.p. beating, too! *Or anything up to 2000 h.p.!*

LOTS OF THE PLANES IN THIS MAGAZINE USE GULFPRIDE TOO!

NOTICE

We didn't have enough room for the Little-Known Facts About Well-Known Planes Department, this month, because we had so much to say about the Little-Known Navy Gunners. But we'll have the L.K.F.-A.W.K.P. Dept. back, next month. Meanwhile, we're still offering genuine guaranteed commissions as "Perch Pilot (br)" for L.K.F.A.W.-K.P.

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Simmonds-Benton Aircraft Power Plugs have long been the first choice of private flyers for their dependability and economy of performance. Now continued research and development, based on years of experience in the field, have produced new ceramic spark plug designs . . . to be made available to post-war commercial and private aviation. Today or in the future . . . for greater power in the air . . . specify Simmonds aircraft plugs.

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More than 50,000 Allison engines have been built for the use of Allied fighting pilots around the globe. ★ These skilled pilots using fighting planes powered by these engines have established a lopsided "box score" in our favor. ★ That is testimony to the striking power of good men armed with good American fighting equipment. ★ It is also an indication of aircraft engine performance you will be glad to have in the planes you use after final victory.

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P-38—Lightning
P-39—Airacobra
P-40—Warhawk
A-36 and P-51A—Mustang

The more-than-50,000 Allison engines built for the U. S. Army Air Forces power the above planes.

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DIVISION OF
Indianapolis, Indiana

GM
GENERAL MOTORS

Every Sunday Afternoon—GENERAL MOTORS SYMPHONY OF THE AIR—*NBC Network*

SO THE ENEMY *IS* LISTENING!

The enemy is listening and he hears well.

So the enemy *is* listening!

Not even the "superman" of the "master" race can hear the gliders . . . the gliders that settle silently in the darkness . . . the gliders that land their tough, airborne infantrymen and weapons far behind the lines.

That's why the enemy stirs uneasily behind the walls of his beleaguered fortress . . . watching with a million eyes . . . listening with a million ears. But never knowing—never, until the walls are breached. THE WACO AIRCRAFT COMPANY, Troy, Ohio, U.S.A.

WACO's wartime job is designing and building gliders for the Army Air Forces . . . and providing engineering supervision for the eleven other companies which are manufacturing gliders according to WACO plans and specifications. WACO's peacetime job, as in the past, will be building better planes for better flying.

Waco

WACO AIRPLANES

ALL ARMY CARGO-TRANSPORT GLIDERS ARE WACO DESIGNED

JUST AMONG OURSELVES

Editorials and Comment

Our International Route Pattern

The announcement by the Civil Aeronautics Board last month that our foreign air routes will be expanded from the present 80,000 route miles to a total of 140,000 miles is a welcome piece of news but by no means a guarantee that this nation will soon have a world-girdling merchant marine of the air. The most encouraging aspect of the announcement is that the Board doesn't intend to wait any longer for a clarification of our post-war policy regarding foreign air services but will proceed to act under existing laws.

In addition, the hundred-odd trans-ocean applications pending before the CAB can now be heard. The basic route pattern will simplify the hearings and expedite the award of certificates of convenience and necessity although all Board decisions must go to the President for approval.

The big question mark is our acquisition of landing rights in foreign countries, a matter that comes under the functions of the State Department. Where we *want* to go is one thing; where we *can* go is another.

We hear a lot of talk about "freedom of the air" and internationalization of the air space. Present international law provides that each nation controls the air space above the territory it owns. Perhaps the United Nations will work out a plan whereby all nations may be free to fly over the air above the oceans and sidetrack international law by treaties of navigation and commerce as was done long ago in the case of sea-going trade.

Once again we pose the questions propounded in these columns last April. What type of agency or agencies will the United States provide to engage in foreign air transport? Shall we pursue a policy of "freedom of the air" and, if so, just what constitutes "free air"? Should operating rights, including commercial air transit and commercial outlet be negotiated between this nation and foreign countries individually or should an international aviation-control body, guided by the United Nations, decide and officially assign such operating rights?

Our newly discovered air experts, both in and out of the State Department, might well remember what freedom of the seas did to our merchant marine. We can well beware of the subsidized air transport operations of low wage countries, or else suffer the same tragic consequences as on the sea.

The CAB announcement of our first basic international route pattern, though welcome news, is but the first step up the long and rocky path leading to a fair and stable system of international air transportation based on American self-interest, the maintenance of a hard-earned peace and the moral and economic responsibilities of the strongest nation to the poverty-stricken, war-weary peoples of the world.

★ ★ ★

Safety -- or Else

Now is an opportune time to plan ahead for immediate reconstruction of non-scheduled civil aviation so that the necessary groundwork will have been prepared when the boys start coming home and civil airplanes can again pour forth from our factories, destined for sale in the personal aircraft market.

The Civil Aeronautics Administration and the Civil Aeronautics Board, with energy and keen foresight, are looking to the day when non-scheduled aviation will again begin to flourish and the skies will be filled with thousands of new pilots, born of the war, but adaptable to peacetime aviation. Measures are now being taken to plan and provide the necessary facilities for the anticipated rapid expansion in personal flying. Regulations are being simplified and red-tape is being cut to the bone. Air traffic problems are being approached scientifically and communications and other aids to airmen are undergoing a period of amazing improvement and development. All in all the pattern of postwar private flying looks promising and appears to be in capable hands.

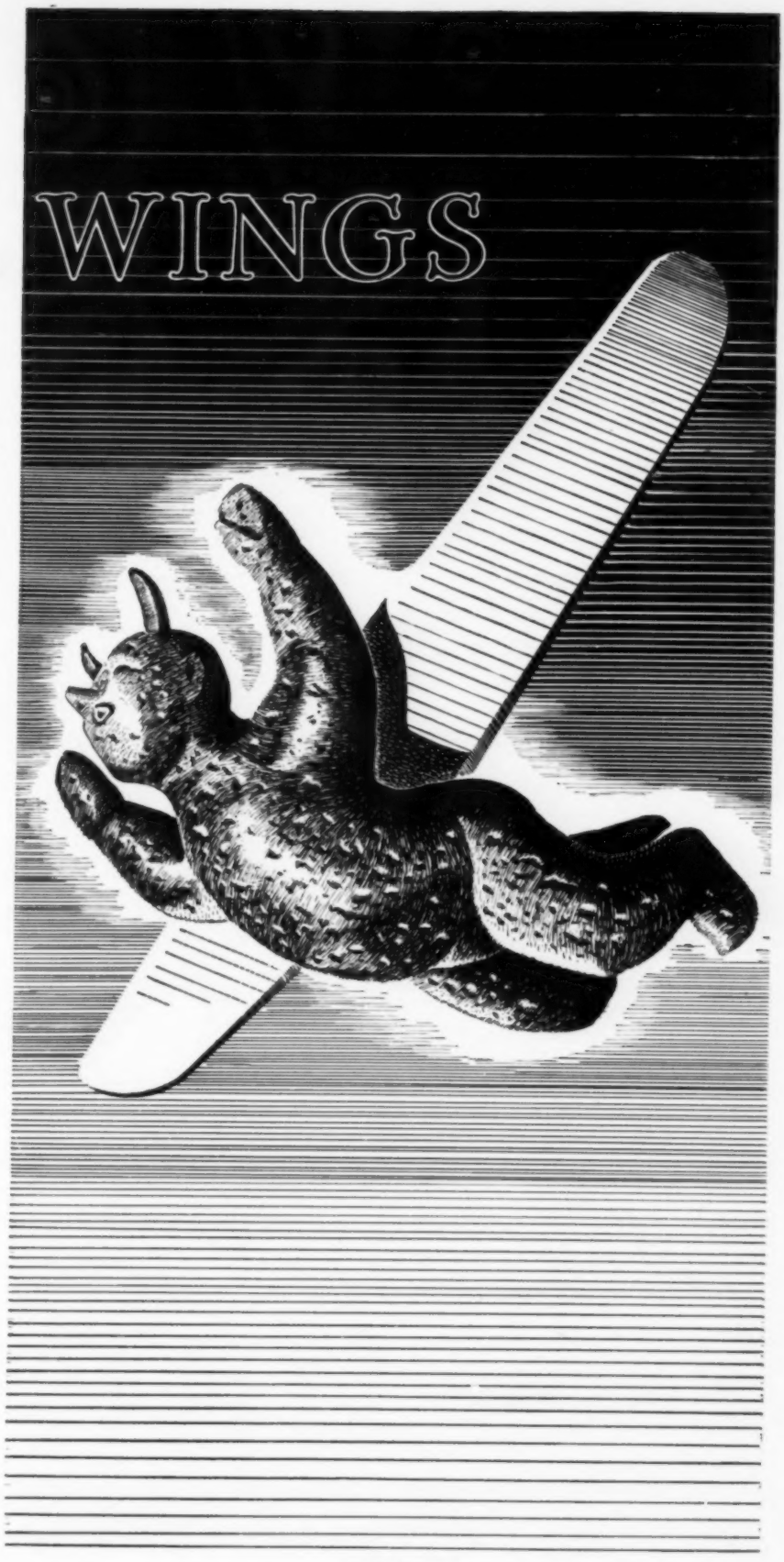
But there is one department wherein we are woefully unprepared. It centers around flying safety, a matter of deep concern with everyone interested in postwar aviation but a problem so complex and involved, even the experts admit they're stumped. They know, like all other old timers and hard-headed realists in the flying game know, that without an improvement of our accident records, substantial public acceptance of personal flying will remain an idle dream.

We have just finished reading a splendid book, "Stick and Rudder" by Wolfgang Langweische, a private pilot and clear-headed aviation writer who turned test pilot when the war came on. In his book is the germ of an idea that might prove to be the answer to our dilemma. Every airman, including amateurs, instructors and even combat pilots should read this piercing, lucid book because it develops a refreshingly new interpretation of the physical factors affecting flight; it re-establishes a serious respect for the flying machine; it creates a deeper and indelible impression on the reader's mind just why the majority of non-scheduled fatal accidents are little short of murder and suicide, caused as they are by loss of control at low altitudes. A special chapter in the volume by Leighton Collins, accident-wise editor of *Air Facts*, brings into sharp and penetrating focus the deplorable lack of understanding and appreciation of the factors which contribute to the shameful and useless stall-out accidents that account for over 70 per cent of non-scheduled aviation accidents.

We commit to the CAB Safety Bureau and CAA the earnest hope that the whole subject of aviation education and flight instruction methods be studied and overhauled in a vigorous and honest effort to inculcate a higher and more effective degree of flying safety in the realm of personal aviation. We know from bitter experience that all the rules, regulations and restrictions in the world will not reduce the accident rate 5 per cent. Only through education and training can we hope for improvement.

Now is the opportune time to quit playing ostrich, pull our heads out of the sand, cease taking our accidents for granted and apply some common horse sense to our training procedure deficiencies, even if it requires the re-indoctrination, re-training and re-certification of every pilot and instructor in the country ★ ★ ★

Now this little Imp's got WINGS



THE LITTLE IMP is made of *petroleum coke.*

He used to be a nuisance . . . but the "University of Petroleum," Shell's research laboratories, took him in hand—and he has sprouted wings . . . *aluminum* wings.

For every pound of vitally needed aluminum produced, ¾ pound of petroleum coke is needed. Formerly, it had to be chipped out of the coking ovens "by hand"—a slow job which tied up the refining unit and took manpower.

Then, well before Pearl Harbor, Shell scientists and engineers first developed "hydraulic de-coking"—a new, quick, mechanical method of recovering petroleum coke in its purest form. The production of petroleum coke is now astronomical!

Thus—one more outstanding contribution to America's war effort from Shell.

* * *

Shell was first, too, to supply American military aviation with a super fuel—100-octane gasoline—giving our planes new speed, flying range, and tactical advantage. Later Shell discoveries vastly increased both power and production of aviation gasoline.

Today, more Shell 100-octane aviation fuel is supplied to aircraft engine manufacturers, for critical test and run-in purposes, than any other brand.

And now, each day, Shell produces more than enough to fuel a bombing mission of 2,400 planes from England over Germany.

Farsighted airport operators will find Shell's wartime popularity a profitable peacetime asset.

SHELL

FINER FUELS FOR THE AGE OF FLIGHT

"Ship it on the ten o'clock plane"

AS THE development of the American railroad and the American automobile each successively brought this country a new era of transportation and commercial advantage, so will American Aviation bring a quicker tempo in transportation and trade development the nation over.

The outlook for trade expansion alone, through aviation freight and express service between major markets and thousands of smaller towns and cities is the bright, engaging promise to American commerce.

When this new air age arrives and the popular demand of intermediate American communities is an equalized measure of aviation service, their needs will best be satisfied by organizations like AVIATION ENTERPRISES LTD., whose officers and executives possess combined and successful aviation and transportation operating experience.

Aviation Enterprises Ltd.

CONTRACTORS TO THE U. S. ARMY AIR FORCES

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HOUSTON

AVENGER FIELD
SWEETWATER

From our bomber plant in Georgia are coming B-29 Super-fortresses.

First American jet propelled plane, designed and built by Bell Aircraft.

The Bell Airacobra helped turn the tide at Stalingrad and on other fronts.

On many planes and ships are the Bell designed flexible gun mounts.

Preview of the new Bell fighter—as it will be seen in action by the Axis.

The Bell Helicopter—adaptable for many missions of war and peace.

Bell Aircraft at War

. . . A PROGRESS REPORT

A good fighter plane—basic in modern military operations—must pack plenty of wallop. That's why Bell Aircraft developed its hard-hitting Airacobra around a 37-millimeter cannon firing right through the nose of the plane.

This "cannon on wings"—first American single-engine fighter to carry a cannon in the skies—has turned in a performance which caused the Russians to tell WPB Chairman Donald M. Nelson the Airacobra was one of the American products they liked best. And today the Airacobra is being joined by a new Bell fighter, capable of high-speed, high-altitude performance.

Building such fighter planes is only one part which Bell Aircraft is playing in the war. On another front, the Bell Bomber plant in Georgia is producing the Boeing designed Super-fortresses (B-29's), largest long range bombers ever seen. And from our Ordnance Division in Burlington, Vt., come Bell designed gun mounts, including the new hydraulic power mount, that give the machine guns of many allied planes and surface ships their firing accuracy.

Meanwhile work is continuing on two other war projects, America's first jet propelled plane, and the new Bell Helicopter.

Post-war activities are being locked in our minds until the day of Victory. Then our organization, staffed with production men of skill and imagination, will turn their thoughts to pioneering in an aviation world at peace.

© Bell Aircraft Corporation.

MEMBER AIRCRAFT WAR PRODUCTION COUNCIL—EAST COAST, INC.

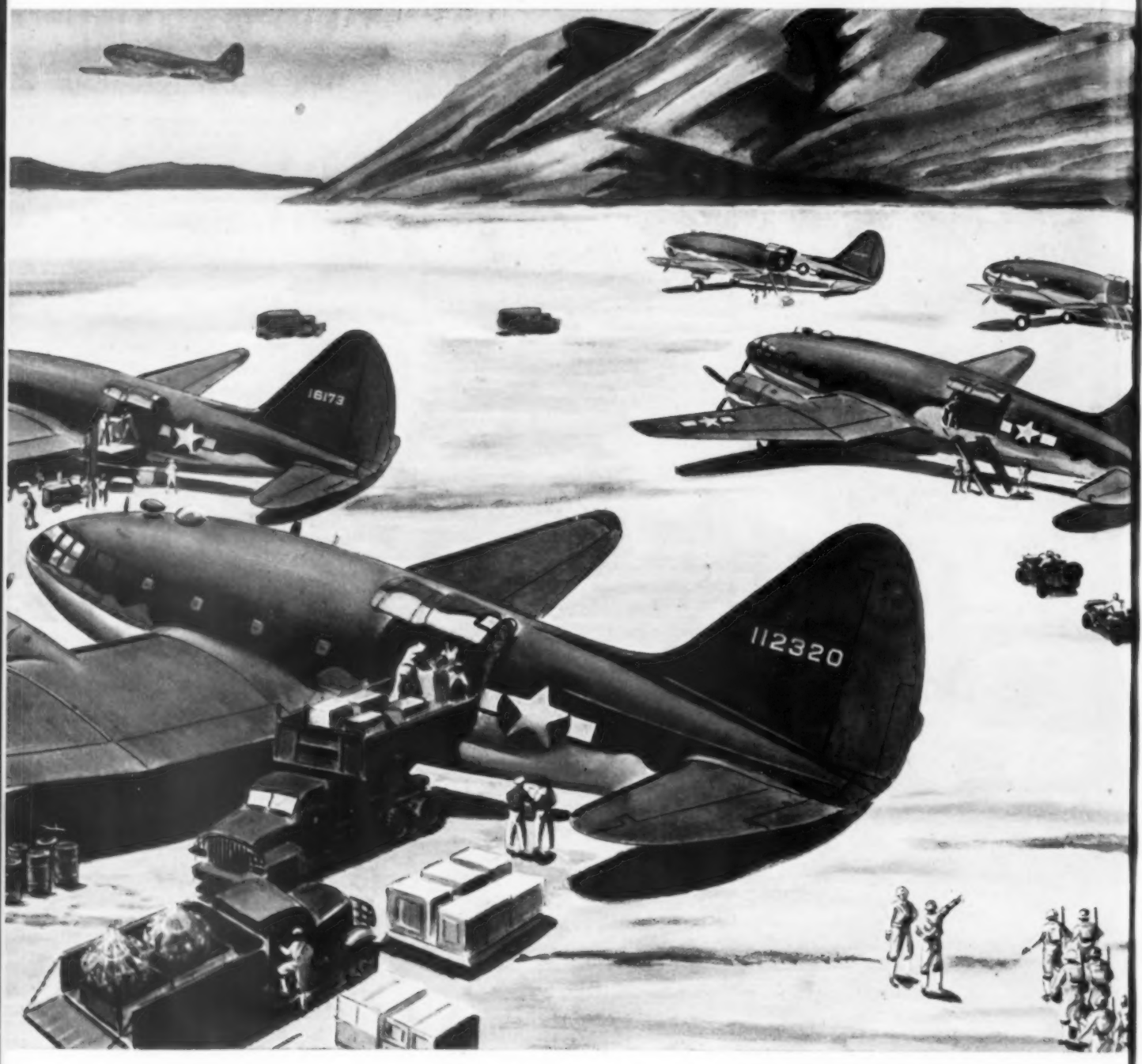
BELL *Aircraft*

PACEMAKER OF AVIATION PROGRESS

Niagara Frontier Division, Buffalo and Niagara Falls, N. Y.—Ordnance Division, Burlington, Vt.—Georgia Division, Marietta, Ga.

BUY WAR BONDS AND SPEED VICTORY

THAT OUR COUNTRY MIGHT *Out-Maneuver* THE ENEMY



Curtiss C-46 Commando Transport!

With the war in high gear, speed is the essence of victory! No nation can hope to wage global warfare and win without a means of moving vast numbers of men and a tremendous tonnage of supplies, long distances at high speed.

The Curtiss C-46 Commando Troop and Cargo Carrier has admirably met this demand for unprecedented mobility.

Today the Commando is a part of the greatest military transport program ever inaugurated. Tomorrow it will fly supplies for the rehabilitation of the world. Hard on the heels of victory, too, will come the Commando's conversion to both a luxury liner and a commercial cargo carrier for civilian service. LOOK TO THE SKY, AMERICA!

Another Contribution of

Curtiss-Wright Corporation

AIRPLANE DIVISION

Toward Winning This War

BUFFALO - COLUMBUS - ST. LOUIS - LOUISVILLE

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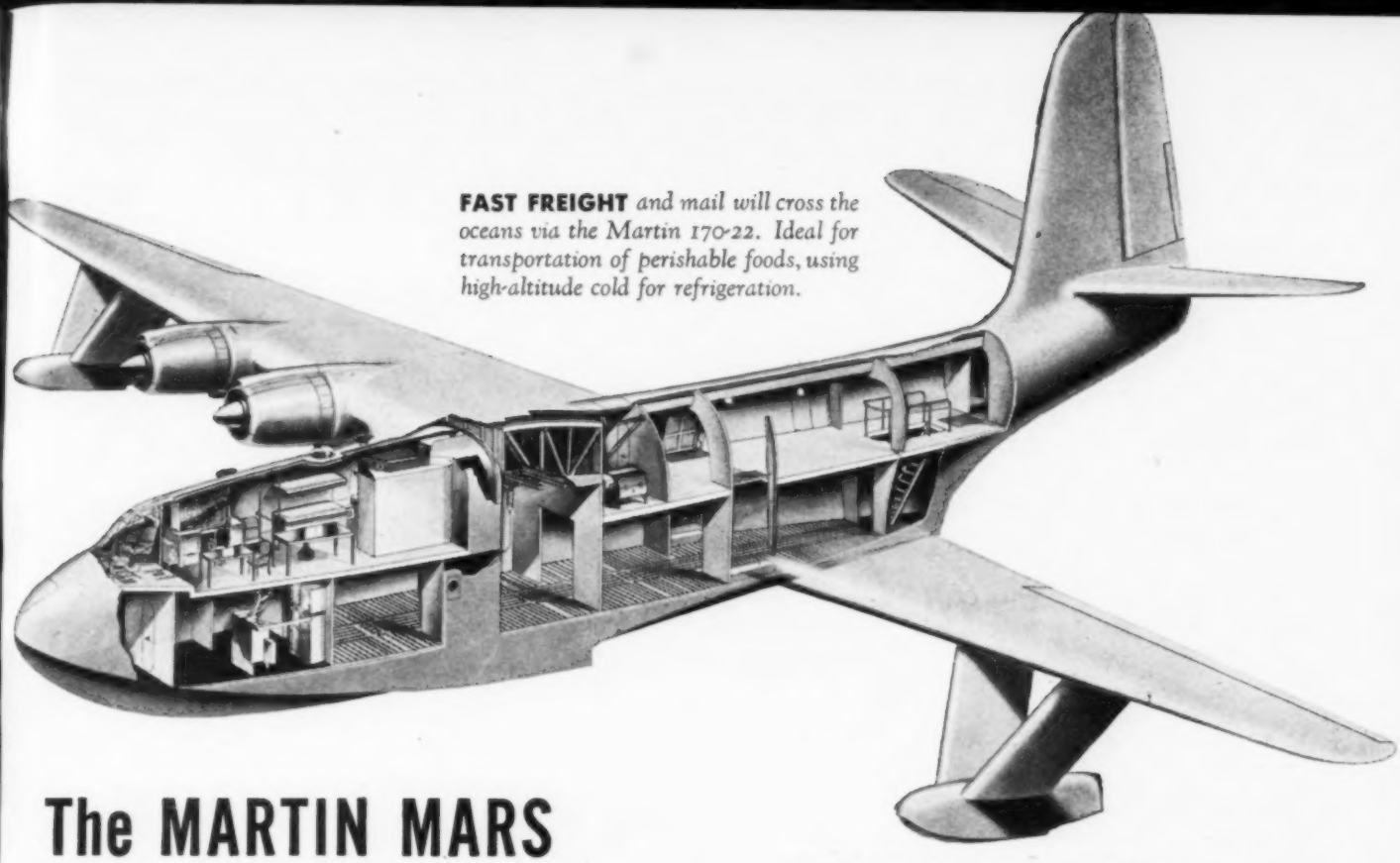

FAST FREIGHT *and mail will cross the oceans via the Martin 170-22. Ideal for transportation of perishable foods, using high-altitude cold for refrigeration.*

The MARTIN MARS affects your POSTWAR PLANS!

IN the Mars flying boat, airline operators will have a successful type thoroughly tested in overocean transportation. She's the most efficient airplane yet built, per pound of material used, per horsepower, per gallon of fuel, and has the lowest ton-mile cost.

Start revising your postwar plans! For these are no visionary, far-distant ships. They are commercial versions of the Martin Mars. The original Mars is now in regular trans-Pacific service with the Navy, while 20 larger 82-ton Mars Navy transports are under construction. The plane of tomorrow is flying today!

At war's end, Martin production lines will be tooled and manned for fast delivery. If the industry is permitted to set aside funds for such postwar construction and employment, American aviation will be first in peace as it is in war.

THE GLENN L. MARTIN COMPANY, BALTIMORE 3, MD.
THE GLENN L. MARTIN-NEBRASKA COMPANY—OMAHA

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AIRCRAFT
Builders of Dependable Aircraft Since 1909

LUXURY LINER *of the air, the Martin 170-21 is designed to provide complete living facilities for 54 passengers during flights of 24 hours or less.*

COMBINATION *cargo and passenger carrier, the Martin 170-23 provides accommodations for 34 passengers plus an 18,000 lb. cargo. Range, 3,500 miles.*

Revving Up

NOTICE TO CHARTER OPERATORS: Internal Revenue men are beginning to check up and file charges against charter operators who are not collecting war travel tax of 15 per cent on all airplane charter flights. Operators can get all necessary forms and details from their local U. S. Internal revenue offices.

★ ★ ★

SURPLUS AIRPLANES SURVEYED: Chances are the first surplus military airplanes offered the flying public will be trainers and liaison types. Chief of CAA Flight Test Section K. R. Aldrich is now at Vandalia, Ohio, with a staff of technicians who will run type inspections on surplus airplanes for the purpose of determining what modifications will be necessary, if any, for CAA certification. It will probably be some months before the craft are offered for sale and there's no indication what procedures will be followed when the time comes for disposition. . . . Meanwhile, release of surplus military aircraft for commercial use before the war ends, and use of combat types to bargain for international bases and landing types, have been recommended by the Harvard University Graduate School of Business Administration in a report to the AAF. ★ ★ ★

EXIT GREASY SPOONS: A trend applauded by air travelers and airport patrons everywhere is the clean-up of notoriously crumby, dirty, greasy and fly-blown airport restaurants and cafes. Latest to come clean is Dallas' Love Field, where over $50,000 will be spent by Hull-Dobbs Enterprises, Inc., of Memphis, new to Dallas.

★ ★ ★

ACTION AHEAD: The Civil Aeronautics Board made world-wide news last month with its announcement of postwar international air routes, covered elsewhere in this issue. Crowding the feeder line hearings out of the spotlight on the fast moving stage of scheduled air transport, the Board's action was particularly significant in view of the fact that it had the approval of everybody concerned, including the White House, the State Department and Congress. But don't forget the "feeders." CAB has begun hearings on all applications in the New England area and will go right down the line with respect to applications in other sections of the nation, expediting them as rapidly as possible. Only missing link right now is the Board's statement of policy regarding local-feeder-pick-up lines and it is due out most any day now. Applicants are eagerly waiting for this decision since it will reveal, among other things, what kind of equipment will be required and whether single engine and single pilot operations will be permitted. ★ ★ ★

WASP'S END? Following closely on the heels of congressional action that killed militarization of the WASP program was an official announcement by General H. H. Arnold that WASP training would be discontinued. In all probability the next move will be the release of women pilots now serving with the Air Forces, ending the most controversial aviation subjects of recent years. If the women are turned out and sent back home, it does not follow that CAA-WTS instructors and instructor trainees now afloat are any better off.

NEW COMBAT TYPES REVEALED: Although production, armament and performance details of the P-61 Black Widow night fighter are still on the restricted list, the Army Air Forces cleared several photographs of the latest Northrop design in mid-June. Shown above in flight, minus the powerful complement of armament which makes it one of our deadliest fighter aircraft, the Widow is being turned out at the Northrop factory in California at a tremendous rate, due to a 30 per cent increased order scheduled by the AAF. Powered with two Pratt & Whitney radials, the craft is the first functional night fighter developed out of the experience of this war. The War Department has also revealed existence of Douglas' new A-26 Invader, a larger, more powerful "improvement" of the A-20 type; Bell's new P-63 Kingcobra, a larger and "improved" version of the P-39, which it resembles. Bell's jet-propelled fighter has been designated P-59A and is called the "Airacomet."

HE won't dodge dying . . .

Don't YOU dodge buying!

This is the time to dig out that extra hundred bucks and spend it for Invasion Bonds. Or make it $200. Or $1,000. Or more if you can. There's no ceiling on this one!

Back the Attack . . . BUY MORE THAN BEFORE!

Magnesyn Remote-Indicating Compass System

Here is a compass that solves a major problem, both in the design and navigation of airplanes. It reduces to a minimum the effects of the many magnetic influences in the plane, yet enables two indicators to be placed at strategic control points. Pioneer has accomplished these results by creating a *compass system.* This includes a sensitive and accurate magnetic element which can be located at a point of minimum magnetic disturbances. Conveniently located indicators are connected by simple wiring. The special design of the transmitting unit further assures the optimum compass performance under all conditions of acceleration in both vertical and horizontal planes. Details of operation and installation are available on request. Write to Eclipse-Pioneer Division, Teterboro, N. J.

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THE INVISIBLE CREW
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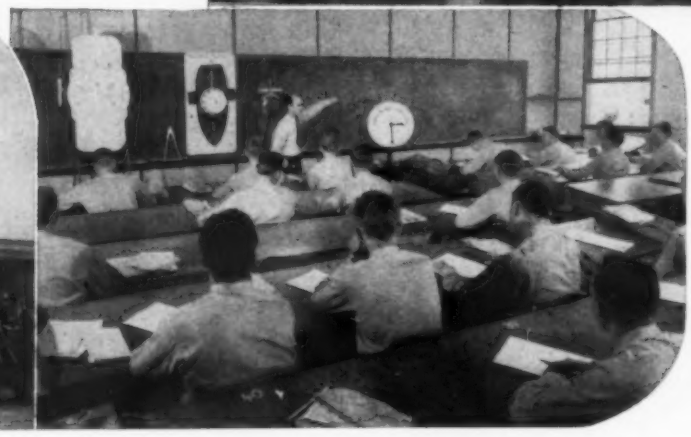
THE WORK REMAINS...
but the Men Change! ★



As we teach Army Aviation Cadets to fly, our duties are constant and our work is unceasing. Only our students are new, for we graduate one class of fine young men after another. The Army sends us these men. The Army supplies the planes. But the clock-like precision of Primary Training for those men is our duty . . . the accurate maintenance of those planes is our responsibility. Our flight instructors, mechanics and other specialists by the hundreds, are steadfast in loyal duty. *The work remains* and the job is being faithfully done by the Civil Contract Schools!

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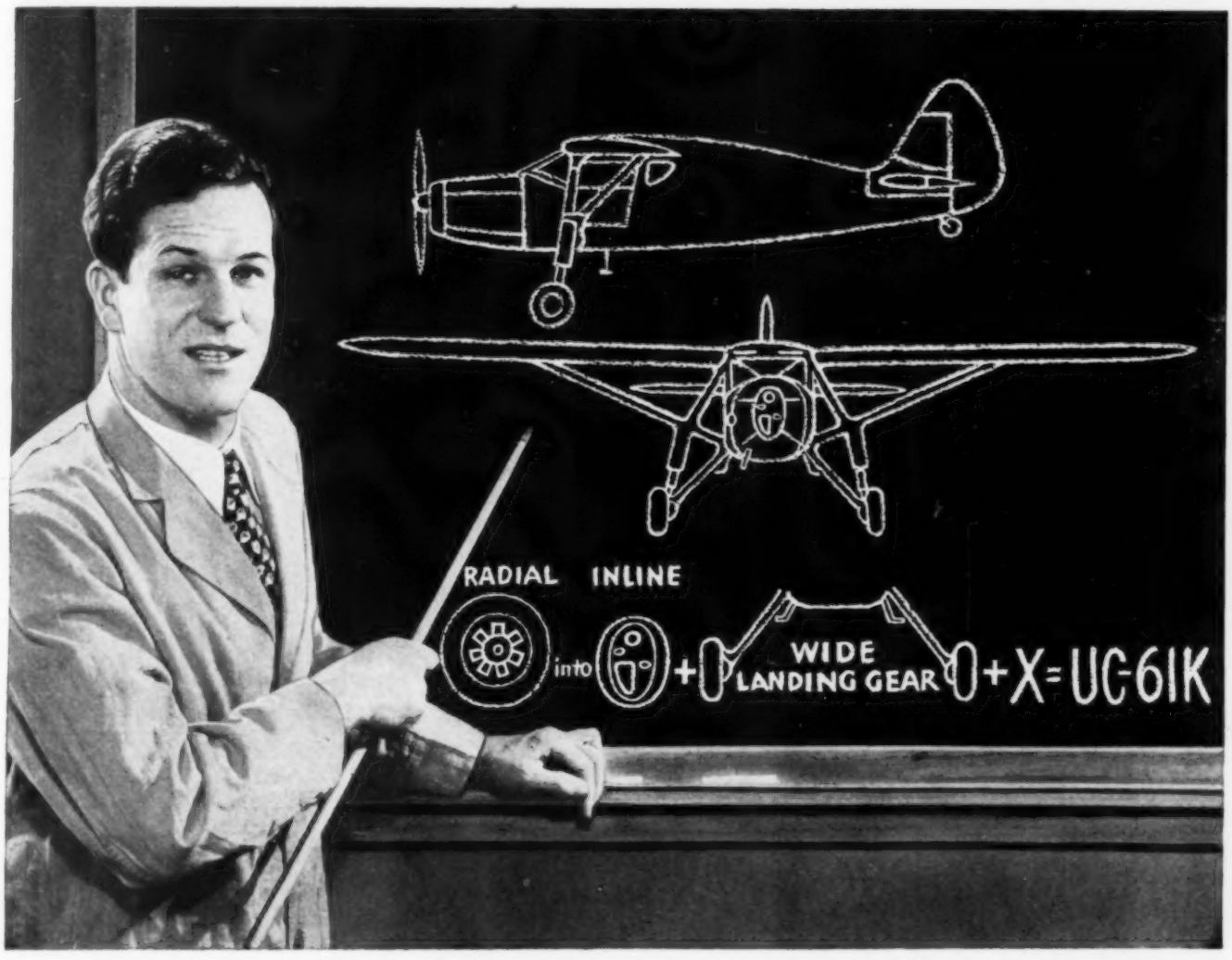

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The famous Fairchild "Forwarder", designed in 1932, has been constantly revised and improved . . . and is now called the UC-61K.

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ESSO

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Today Humble-Esso Aviation Products serve the vital demands of war; tomorrow they will serve equally well the needs of peace.

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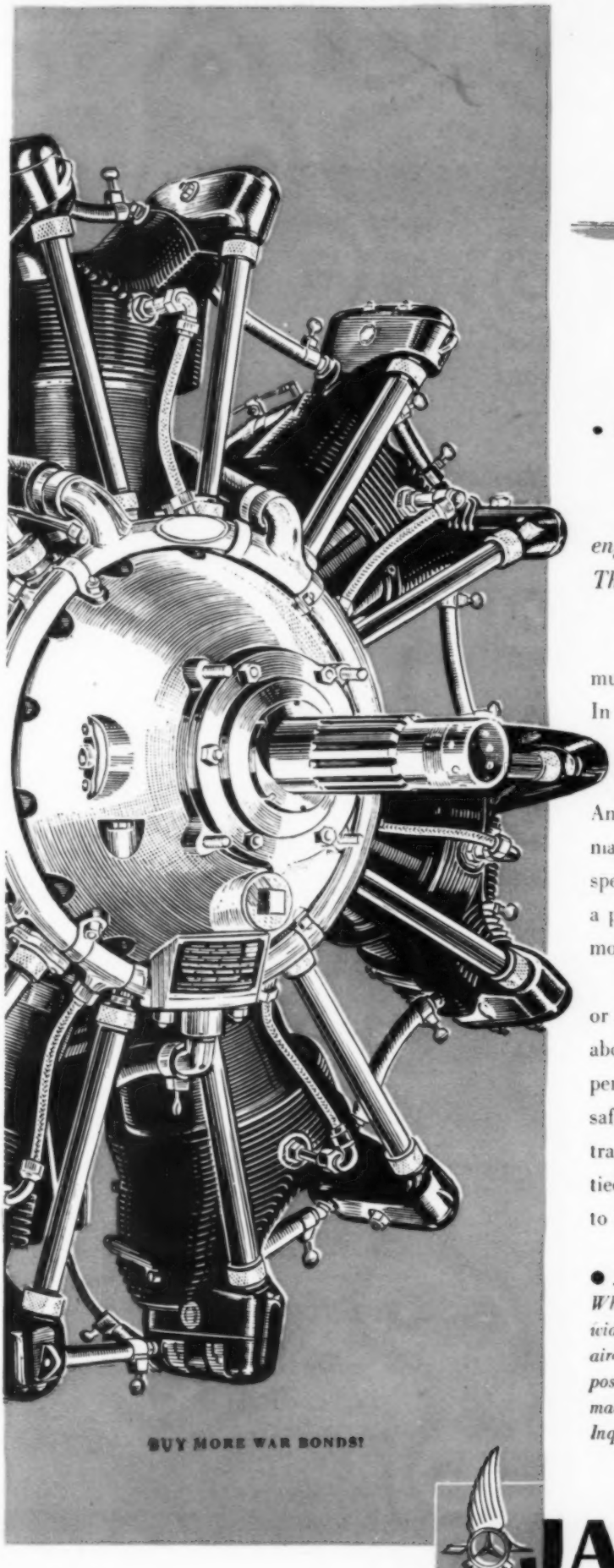

Pedestrian

. . . but very pertinent!

"Too bad," said a well meaning friend, "that your engines are used only in training and transport planes. They'd get a lot more publicity in combat ships."

MAYBE SO, but we're satisfied. Publicity doesn't prove much about a plane engine—but performance records do! In twin-engine trainers under hard student handling, these Jacobs engines take more take-offs and spend more time at full throttle than any engine in combat service . . . And then stand up for more than 1,000 hours between major overhauls—performance *three times* the original specification or expectation. That's air time enough to take a plane more than 150,000 miles. Ever hear of an automobile engine putting on so much mileage *between overhauls?*

To anybody who knows anything about plane engines, or aircraft operation . . . to anybody who knows anything about airline equipment or operating costs . . . Jacobs' performance records stand out like a house afire! Because safety, payload, maintenance costs, and profits in any air transport operation, feeder or through line, are pretty well tied up with the engine. And Jacobs engines are not going to lack either jobs or markets after the war.

● JACOBS AIRCRAFT ENGINE COMPANY *also manufactures Pratt & Whitney engines used by both the Army Air Forces and Navy in a wide variety of services . . . Largest manufacturer in the world of aircraft engines of medium power rating, Jacobs has in prospect postwar models of both higher and lower horsepower than those now made and interesting power applications for uses other than aviation. Inquiries are invited . . . Jacobs Aircraft Engine Co., Pottstown, Pa.*

JACOBS . Pottstown, Pa.

Acme Photo

Hurtling cross-country at an average speed of 355 m.p.h., TWA's sleek new Lockheed Constellation arrives at the Washington airport with a new record of 6 hours and 58 minutes. This largest transport plane in the world has been turned over to the Army for whom it can carry 100 soldiers with full equipment.

RECORD-SMASHER

—the shape of things to come!

Our hats are off to TWA and Lockheed. Their magnificent Constellation which recently shattered all coast-to-coast records, is more than a superb example of American designing and engineering genius. It is a glimpse into the future . . . a concrete prophecy of finer, swifter air transportation in the days to come.

It is only natural that we at CECO feel a glow of pride that CECO CARBURETORS have been chosen for this newest giant of the skies. And in the future as in the past, our combined efforts will be concentrated on building finer and still finer products for the "record-smashers" of the years ahead.

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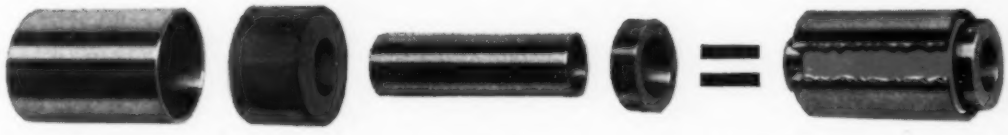
Is Used as a Vibration Insulator . . . As a Trouble-Free Torque Bearing . . . As a Bearing Cushion to Correct Misalignment



GENERAL SILENTBLOC is made of three main members—1. Straight or flanged tube. 2. Rubber cushion ring. 3. Inner sleeve or solid shaft. Rubber is inserted in tube under high pressure; then sleeve is "shot" through rubber ring with terrific force. Extreme pull of elongated rubber produces indestructible cohesion of parts. Each Silentbloc design is engineered to give needed deflection in all planes.

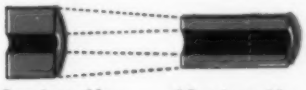
IF your product moves, has working parts or can be harmed by foreign vibration—General Silentbloc can improve its efficiency, lengthen life and lower maintenance.

Silentbloc is not a "piece of rubber" stuck in because it is resilient. These shear-type mountings, bearings and couplings are engineered in shape, size and design to give the exact performance that solves your particular problem.

In its various forms, Silentbloc can do three things:

1. *Damp vibration or insulate against it.*
2. *Give trouble-free torque action.*
3. *Correct for misalignment in bearings or shafts.*

The predictable operation of Silentbloc comes from its patented principle of elongation and confinement of the rubber.



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Our skilled engineers can fit Silentbloc to your job by varying its size and design, the elongation, the distortion of inner and outer diameter of the rubber, the type and modulus of the rubber. The stretched rubber stays alive even when not in motion.

Silentbloc has proved its advantages in many fields—war material, automobiles, aircraft, industrial and home machinery, electrical and electronic equipment. It can improve your product. For fuller information, write The General Tire & Rubber Company, Dept. SF, Wabash, Indiana.

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The GENERAL SILENTBLOC
MOUNTINGS . . . BEARINGS
COUPLINGS

SUPERFORTRESS

—Boeing Photo

Here is the B-29 in four different flight attitudes. Absence of guns in photos gives transport appearance, heightens streamlining. Note mid-wing design, great fuselage length between wing's trailing edge and pilot's windows.

Introducing the B-29—a pilot's plane for all its size and weight, with range, speed and bomb capacity to carry strategic air power to Japan's war resources.

By TOM ASHLEY

WE took a hop in a B-29 early in May, talked to the test pilots, spent a couple of days behind guarded doors listening to Army Air Forces and Boeing experts explain its combat and design features, and went through its production from raw materials to flyaway. Now that the B-29 has bombed the enemy, the War Department says we can tell about the Superfortress. This, then, is an introduction to one of Uncle Sam's most secret weapons — the story in full must remain to be told in combat missions by the airplane itself as the biggest, highest-powered, most deadly armed, fastest, highest-flying and longest-ranged heavy bomber ever to hit the warpath.

Exact figures on speed, range, altitude, firepower and bomb-carrying performance of the Superfortress are restricted, but the Army has released the following data:

Overall size: Half again as large as the B-17.

Maximum speed: Well over 300 mph. (B-17: Over 200 mph).

Gross weight: Perhaps twice that of B-17 (65,000 pounds gross is the Flying Fortress figure).

Ceiling: Well over 30,000 feet.

Wingspan: 141.2 feet (B-17: 103 feet).

Length: 98 feet (B-17: 75 feet).

Height: 27 feet (B-17: 19 feet).

Power: Four 2,200-hp. Wrights (B-17: Four 1,200-hp. radials).

Propellers: Four-bladed Hamilton Standards, 16-ft. 7-in. diameter (B-17: 3-bladed, 11-ft. 7-in. diameter).

Beside the B-29 the more familiar B-17, called "Flying Fortress" because of the defensive firepower, is a mere aerial pill-box.

Every piece of equipment on the bomber that moves is activated either by an electric motor or cables, with the exception of the braking system, which is hydraulic. One hundred and fifty electric motors, of scores of sizes, go into each B-29. It is the nearest any U. S. airplane has yet approached to being all-electrically operated.

Each engine is equipped with two turbo superchargers.

Before climbing into our B-29 at the Wichita, Kansas, Boeing plant, we asked the Boeing test crew in charge how they felt about the big one. "It's a dream," said Test Pilot C. P. (Boo) Paschall, who had logged 359 hours of B-29 time by the time we flew with him. "It's the best handling plane I ever flew, and I've flown several in my time. The boys in combat will find it gives them just about every improvement they ever hoped for—it's a pilot's airplane all the way through." That's covering a lot, but in flight we found his favoritism fully justified and the B-29 exceeded our personal expectations at least 50 per cent. Other writers opined the same after their hops and, although the Superfortress is, of course, far from being a "perfect" airplane, combat crews soon will be sending back their own frank and honest opinions and these are expected to uphold, if not exceed, the impressions left with the few civilian observers who have been privileged to study the huge craft. Many of the "bugs" which plague a new airplane model have been removed from the B-29, and those that remain are being eliminated as speedily as they become known in testing, ferrying and actual combat.

Our take-off position inside the big gunnery cabin provided a good vantage point, and we made ourself comfortable as the Superfortress was taxied from the ramp, where dozens of others awaited testing and ferrying. The warm-up was brief and perfunctory, and on the inter-com we heard not more than a dozen words exchanged between the pilot and the engineer. Just before the start of the take-off, the engineer informed the pilot that one of the cowling flaps had a loose gadget, but this was of no moment, and Paschall gave her the

gun, furnishing our first surprise: The B-29 takes off within about the same distance as a B-17. The port wheels were near us, and we had scarcely rolled 900 feet before the big tires ceased their traction and lifted off the concrete. The B-29, freed of the runway, began to gather speed rapidly. There was no sway of side motion, for the giant wings were carrying us steadily and straight with remarkable stability. We passed the boundary with about 75 feet of altitude, quickly picking up speed with the nose shoving ever upward.

Underlying the incredibly short take-off were the B-29's giant flaps—the largest ever installed on a quantity-produced airplane. Pilot Paschall rolled them down into a 25-degree position for the take-off, and there was so much metal hanging from the long airfoil it appeared to be letting down a DC-3 wing. The Boeing-designed flaps, when extended, increase the total wing area about 20 per cent.

The B-29 wing is an innovation, and is known as the Boeing "117" airfoil. It carries a greater load per square foot than any other wing ever built, but it has, in comparison with ordinary wings, decreased drag per pound of lift, increased thickness of the interspar area, better stall warning, and more gradual stalling characteristics. Unusually slender, it has an aspect ratio of 11.5, giving exceptional efficiency because a lower percentage of air loss occurs at the wing tips. The trailing edge is approximately straight except between the inboard nacelles and the fuselage. A 4½-degree dihedral and a 7-degree sweepback combine with the large vertical fin to increase stability, suppressing tendencies to slip of skid. Any tendency to fall off on one wing during a stall is immediately converted into a bank and then into a glide, straight ahead.

As we bored ever higher in remarkable comfort, the absence of roar and vibration became even more impressive. Conversation was in normal tones, thanks to a new high in the art of sound-proofing.

Looking out over the great expanse of wing, we became fascinated by the slowness of the big propellers, their blades flitting lazily around much more slowly than those on other planes. Special reduction gears driving the B-29 propellers have the lowest ratio ever used on an airplane. They turn the blades only 35/100th times as fast as the speed of the crankshaft. This slow-down keeps the speed of the blade tips below that of sound.

When finally we levelled out far above the scattered overcast, we were cruising at well over 200 miles per hour, effortlessly and with remarkable stability. The B-29's speed is deceptive to one not looking at the indicators, for there is no "feel" of power as in other planes, particularly the medium bomber types, which transmit their mighty engine pulses throughout the plane. It is significant that the airplane and its engines are considered to be ideally "mated", the engineers declaring it to be neither underpowered nor over-powered. This holds much meaning for maintenance crews as well as operational personnel.

Pilot Paschall was flying our B-29 on the automatic pilot, lounging comfortably in his roomy cabin with his feet propped up in front of him. "All you have to do," remarked a wag, "is pull lever A and then leave 'er 'B'." But Paschall wasn't even that busy. He just dialed the knobs at his right elbow, and everything was under perfect control. Incidentally, the B-29 has no power boosts for its controls. Its control forces are even lighter than in the B-17, despite the size of the ship, and operation of the rudder actually requires less effort than that of the Flying Fortress. There are reasons, as we soon learned. Newly developed ailerons have combination servo tabs and trim tabs and provide a much greater rolling response than has characterized earlier large airplanes. Although identical in planform and size to those used on the B-17, the stabilizers and elevators are of different airfoil and construction. To prevent stalling the stabilizer airfoil is modified so that the leading edge is turned up, resembling an inverted airfoil.

If some of the B-29's features appear difficult to believe, it should be remembered that the late Eddie Allen, one of the greatest test pilots and flight scientists in the history of aviation, played a major role in development of the B-29. The B-29 received more wind tunnel experimentation and exhaustive research than any airplane ever placed into combat. Ingenuity is recognizable in hundreds of places about its huge dimensions. Its streamlining, for example, represents a great advancement. Virtually all rivets are flush - driven. Aluminum sheets are butt-jointed. Turbo superchargers are enclosed, and drains, vents, air intakes and deicer boots are all flush. To illustrate the plane's aerodynamic qualities, the drag of the B-29 is doubled when the landing gear is down.

As we let down for our approach, Pilot Paschall began unrolling those huge flaps a great distance from the runway and it appeared for a time that we would plow up some farmland. But the power in the big Wrights prevailed and we touched concrete in perfect timing. Our landing speed was about 110 miles per hour. It was a two-wheel landing, and the pilot kept the nose wheel dangling for quite a distance—until, in fact, his speed had dropped below 80. We used no more runway than a B-17.

Features for identifying the B-29 include its elongated nose, protruding farther forward from the wing than ordinary airplanes, and its mid-wing. The circular nose is remarkably streamlined, there being no "chin" turret and no upraised pilot cabin as on the B-17. Everything is inside, including the pilots, whose spacious cabin is right up front in the greenhouse. The bombardier occupies the first seat forward. Immediately behind him sitting a little higher are the pilot and

(Continued on page 52)

B-17 (left) is seen to differ in many respects from B-29's in this formation photo. Note thinness of B-29 wing, elongated nose, improved streamlining.

—Boeing Photo.

Dwarfing the Culver Cadet airplane parked beneath one of its 2,200-hp. engines, the 98-ft. fuselage of the B-29 and its double-wheeled nose gear are clearly illustrated below. At right a crew is filling one of the many fuel tanks in a B-29. Note giant flap hanging from wing.

—Boeing Photo at left; Army Air Forces, right.

Newest Army helicopters are 450-hp. XR-5 (left) shown with Igor Sikorsky standing near nose on runway, and 245-hp. XR-6 (right). Nash-Kelvinator will build XR-6.

—United Aircraft Photos

HELICOPTER PROGRESS REPORT

IN Bridgeport, Connecticut, the Sikorsky Aircraft Division of United Aircraft Corporation is operating the world's first helicopter production line, has delivered thirty service test models of the Army Air Forces' YR-4 'copters and has begun quantity production of the same model under the designation R4-B.

At the same time, Sikorsky has built two new types of helicopters for the Army. They are the XR-5, a streamlined two-place model with tandem seating and powered with a 450-hp. Pratt & Whitney air-cooled Wasp, Jr., and the XR-6, also a two-seater and highly streamlined but powered with a 245-hp. air-cooled Franklin. The R-5 will be built in quantity at Bridgeport and the R-6 will be produced in quantity in Michigan by Nash-Kelvinator under license from Sikorsky.

The three models are being test-flown off the "world's smallest airport" — a plot at the rear of the factory.

YR-4 helicopters, the more familiar type, have been in action in Burma for several months. They are used to evacuate the wounded from inaccessible jungle areas. One of them is also being used in Alaska, undergoing cold-weather tests and being kept in readiness for possible mercy work.

Training of helicopter pilots by the Army Air Forces has gained headway, and a special school is being established in Indiana. In addition, the Army has allocated several YR-4's to the Navy, Coast Guard and the British Royal Navy for training and study for possible uses at sea. History was made recently when the Coast Guard used a YR-4 to carry blood plasma from the Battery in New York to Sandy Hook, N. J. On another mission the same direct-lift aircraft was used to rescue a boy marooned on a sandbar in Jamaica Bay, and on still another it assisted New York firemen in fighting a fire from which their hose lines were cut off by railroad tracks.

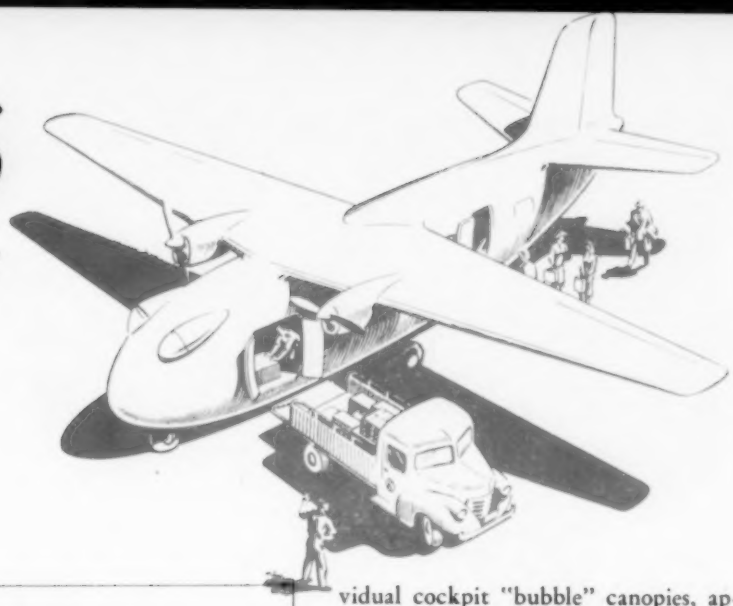
'Copters in formation.

Another chapter in the development of the helicopter was written on March 2, 1944, when Col. H. F. Gregory of the AAF flew an XR-6 387 miles from Washington, D. C., to Wright Field, Ohio, in four hours and fifty-five minutes for a new non-stop flight record. ★ ★ ★

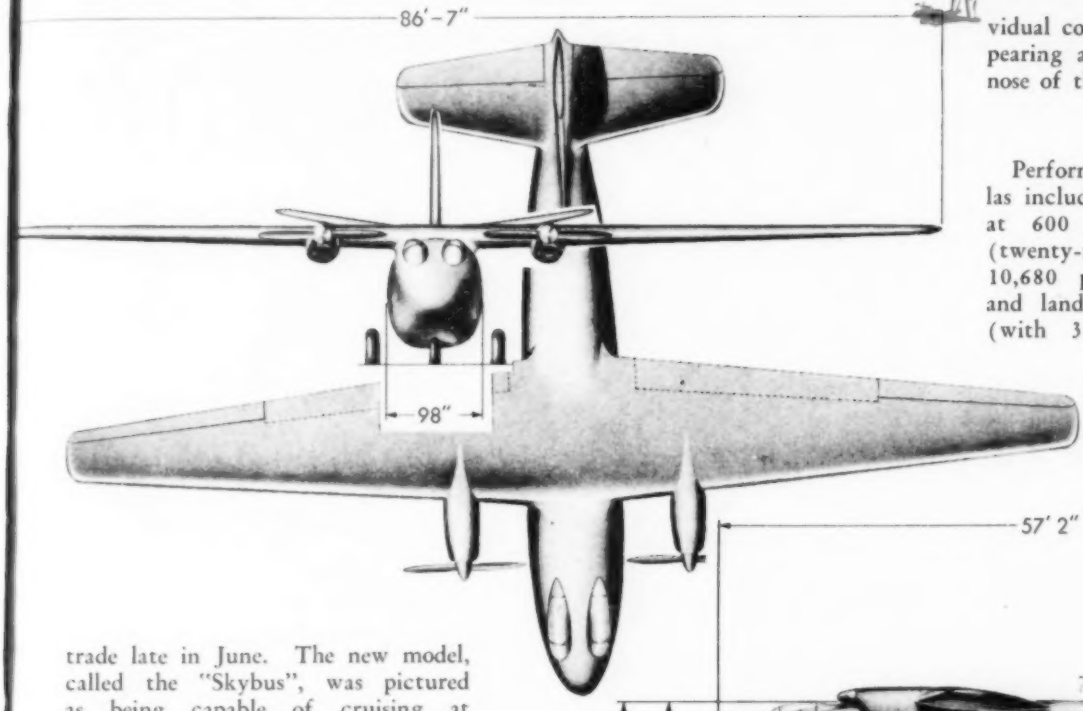
—United Aircraft Photos

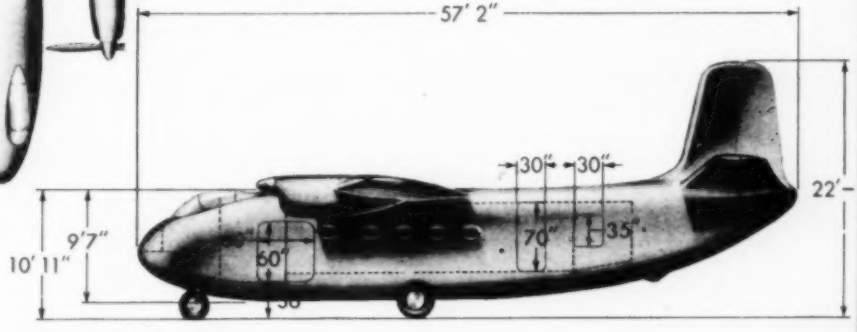
World's first helicopter assembly line at Sikorsky Aircraft, Bridgeport, Conn., shows rear fuselage sections of the R-4B moving down the line during late stages in assembly. Use of lightweight materials simplifies production tooling and handling.

DOUGLAS 'Skybus'



DOUGLAS Aircraft Company's newest transport, designed for the feeder airline market, made its public debut in the company's engineering presentations to the trade late in June. The new model, called the "Skybus", was pictured as being capable of cruising at a speed of 189 miles per hour while carrying a 6,500-pound payload at a gross weight of 17,300 pounds on a total of only 720 horsepower, or 60 per cent of the rated horsepower of its two 600-hp. engines.





(EDITOR'S NOTE: Such performance is difficult to reconcile with orthodox transport aircraft performance standards, which, if applied to the Skybus, would require two 850-hp. engines. For example, consider this simple rule of thumb: A DC-3 having a 24,000-pound gross weight and equipped with engines totalling 2,400 rated horsepower has a load performance ratio of ten pounds per horsepower. At cruising, using only 60 per cent of the rated power, the ratio would go up to 16.66 pounds per horsepower. But for the Skybus the ratio at rated power would be 14.41 pounds per horsepower [divide 1,200-hp. into 17,300 pounds], or about 50 per cent more than the DC-3, and at cruising the Skybus ratio would go up to 24.02 pounds per horsepower [divide 720 hp. into 17,300 pounds]. Another factor making the Skybus' performance unprecedented and unorthodox according to existing airline performance standards is its cruising speed, at this weight-power ratio, of 189 miles per hour.)

Description

Other features add to the uniqueness of the Skybus. It is a twenty-four-passenger, high-wing monoplane of all-metal construction with tricycle landing gear, and its box-like passenger compartment has a movable forward bulkhead which can be adjusted to accommodate varying quantities of cargo. The forward hold has a wide cargo door opening and its sill is truck-bed height above the ground. There is also a chest-high cargo compartment aft of the cabin. Inside the passenger cabin are baggage racks into which passengers themselves place their personal belongings.

The pilot and co-pilot have individual cockpit "bubble" canopies, appearing as two bug-like eyes on the nose of the airplane.

Performance

Performance figures cited by Douglas include these: Engines, two rated at 600 hp. each; empty weight (twenty-four-passenger arrangement), 10,680 pounds; maximum take-off and landing weight, 17,300 pounds (with 3,960-ft. length of field); cruising speed at 60 per cent of power (720 hp.) with maximum weight at 17,300 pounds, 189 mph.; fuel capacity, 300 gallons; range, 600 miles.

Costs

The Skybus is listed at $80,300, which includes the airplane ($63,300), two engines ($14,000) and two propellers ($3,000). Direct operating costs per hour are listed as follows: Crew, $11.20; fuel and oil, $10.50; airplane and propeller maintenance, $4.35; engine maintenance, $6.25; passenger and airplane insurance, $5.65; airplane, engine and propeller depreciation, $7.75; total direct operating costs per hour, $42.10. ★ ★

Thousands of Army Air Force pilots have been trained by civilian contract schools operated by the men pictured at left with Lt. Gen. B. K. Yount of the AAF Training Command. The original operators, from left to right, are Capt. Maxwell W. Balfour, Tulsa; Oliver L. Parks, St. Louis; H. S. Darr, Chicago; Major W. F. Long, Dallas; Gen. Yount; Capt. G. Allan Hancock, Los Angeles; Maj. C. C. Moseley, Glendale, and Earl Prudden, San Diego.

CONTRACT SCHOOLS LOOK TO THE FUTURE

By GLENN E. CARTER
Aeronautical Training Society

IF the United States is to escape an unjust and permanent setback in the aviation world of the future, our Government must act *now* to make sure that we profit by our bitter past experiences. Our country had made promising beginnings after the last war and had the elements of some very worth-while aviation development on a national basis. However, in the lush and forgetful years of false security we permitted many of those resources to disintegrate. We can only thank a kindly providence that a few hardy individuals in aviation succeeded in existing through those years. We must not make this mistake again. A strong national aviation training program must be maintained as a Government policy—and *now* is the time to act. Already some of the finest flying schools in the United States are being forced to go out of business for lack of students. This seems incongruous, indeed, in a country which stands in such grave need of a long-range national aviation training program.

Outstanding example of the setbacks which are already beginning to overtake the strides we have made in aviation training is the fact that by August 4 there will only be forty of the sixty-four ATS Army Contract Flying Schools still in operation. These schools are being forced out of existence because there is no manner in which they can secure enough students to keep going after completion of their cadet quotas. After the war these schools would be able to return to the channels of free enterprise, but if they are to survive the transition period which is already upon some of them, the Government must get going now on a postwar training program which will utilize the facilities now in existence and preserve these important national assets for future national aviation development.

The story of the Army - Civilian Contract Flying Schools which go to make up the Aeronautical Training Society (ATS) could have its locale only in America — and it is a story that should never be allowed to take place in our history again. If it does, the ending might very easily be written in blood and tears.

100,000 Pilots Trained

Let's go back to 1939. General H. H. Arnold, Commanding General of the Army Air Forces, knew that war was imminent, but couldn't get appropriations for enough planes, for training enough pilots, or for enough of anything else. General Arnold on May 10, 1939, called to Washington a group of eight civilians who had been operating outstanding private flying schools. Numbered in that group were Major W. F. Long, Dallas, Texas; Major C. C. Moseley, Glendale, Calif.; H. S. Darr, Chicago, Ill.; Capt. Max Balfour, Tulsa, Okla.; Oliver L. Parks, St. Louis, Mo.; T. Claude Ryan, San Diego, Calif.; Allen Hancock, Los Angeles, Calif.; and E. S. Sias, Lincoln, Neb. Here were men who by their sound judgment and wisdom had overcome the backwash of the last war to make aviation history.

Acting solely on General Arnold's spoken request they flew home and rushed building operations, using their own money — or what they could borrow. This revolutionary program was started without a contract, memorandum, or even a letter of intent. General Arnold was criticized for taking this unprecedented action and was asked what would happen if his bold project failed. When the matter of authority came up later it was authorized in Congress by a scant two votes.

Hitler didn't quit, so our Air Forces continued to expand at an almost unbelievable rate with the increasing number of ATS contract flying schools giving all primary and some basic flight training for the AAF, as well as training pilots for the RAF and other United Nations. The AAF, which numbered only 21,556 men in 1939, has been built to the magnificent air force of today totaling 2,385,000 men. This Army-civilian training setup created by General Arnold and his staff in 1939 has taught more than 100,000 young Americans to fly. Furthermore, they have learned to fly safely. The fatal accident rate for primary flight is only one for every 43,478 hours flown. On the basis of 100 mph. that is only one per 4,347,800 miles. The cadets in these ATS schools fly about 94,500,000 miles per month, roundly ten times as many plane-miles as all of the domestic airlines operating in the United States.

This imposing record, remember, was accomplished under the system of using civilian instructors, more than half of whom are World War I veterans, men of thirty-eight or older, or

classified 4F for combat flying. Use of civilian personnel has saved for front-line duty upward of 100,000 Army officers and enlisted men who otherwise would be engaged in feeding, housing and instructing cadets. The wisdom displayed in the creation of this economical system is graphically shown by the fact that it has saved the Army — and the taxpayers — over $250,000,000 a year.

Retraining for Returning Pilots

The Army originated the idea of these civilian schools and has worked hand in hand with them since their inception. From General Arnold and Lieutenant General Barton K. Yount on down, the Army knows their vital importance and worth. With the war on, however, neither the Army nor the operators have had time or opportunity to speculate on the shape of things to come. All thought must be directed to winning the war.

Congress, however, should realize that it is imperative to plan now for the future. The longer this war goes on, the more vital must our concern become for adequate national defense and training facilities in the postwar years. If the facilities and expert staffs of the ATS schools completing their cadet quotas are to be kept intact for future military use or peacetime aviation development of the country, plans must be made *now* for the provision of activities to keep them in existence until after the war. A strong national aviation policy should demand that this be done. They should be made a permanent and integral part of the structure of our national defense program before it is too late to preserve them.

Congress and the public agree that we have learned one lesson very forcibly. That is that adequate air power will furnish the only real security for this nation in the future. Our permanent postwar preparedness policy must figure on a large and powerful air force. Top Army authorities would prefer never to send out a pilot over twenty-seven years old at the controls of a bomber. For fighter ships they want pilots twenty-five years and under. Combat pilots get obsolete at the same rate as military aircraft. This means, simply, that while we now have a large and highly trained air force, younger men must be trained constantly to defend America. Unless the ATS schools are to be given other jobs to do, how are they to exist and be available for future utility?

These schools have demonstrated that they can teach masses of men to fly safely and do it with economy of money and manpower. In this war they have taught over 100,000 to fly, but war puts a huge premium on youth. Commercial and private flying are not so restricted. No doubt thousands of combat trained boys will want to continue a career in the air, but in order to do this they will have to be retrained. Safe civilian flying will demand that they learn the new equipment, mental habits, traffic rules, and many other essentials. Thousands of AAF technicians will also have to be retrained to qualify for CAA licenses. Civilian schools are pre-eminently qualified, by past performance, to give this training.

The Veterans' Administration is now formulating far-reaching plans for education and rehabilitation of veterans of this war. Thousands of the returning soldiers will desire a career in aviation and the welfare of the nation calls for a tremendous aviation educational backlog. Already some of the first of the injured veterans are being given the opportunity to study in several carefully selected schools. The courses, requiring all the way from six to eighteen months, include thorough training in such things as: Aircraft Maintenance Engineering, Aircraft Design Engineering, Aircraft Instrument Repair, Aircraft Mechanics, Meteorology and Weather Forecasting, Aircraft Radio, Parachute Packing and Maintenance, and Link Trainer Instruction. Who is better qualified than these ATS schools to do this training job? They have the expert personnel, hangars, shops, barracks, fields—all of them paid for—and have proven that they can save the taxpayers money.

The physical plants of all ATS schools cost in the neighborhood of $45,000,000 in actual outlay. In addition to an excellent field, a typical school offers plant facilities including four large hangars, seven barracks, shops, recreation facilities, and ten other fine buildings, all well equipped.

Vast Educational Program Expected

While the Veterans' Administration has heretofore been charged with the rehabilitation of veterans who suffered a service-incurred injury or vocational handicap, the President's signature on the so-called "GI Bill of Rights" (S-1767) would open up a mass training job in this country of unprecedented scope. No doubt a great deal of that training would go into aviation channels. While no one knows exactly how the bill will be administered, it is time right now for those who would be concerned to study what these schools have to offer in such a program.

Line-up of basic trainers at a civilian contract school. Such institutions are being closed down because they're no longer needed for Army pilot training.

Some aviation schools have already instituted new endeavors. Above are students of Dallas Aviation School learning (top) aviation mechanics, (center) aircraft engineering and (bottom) maintenance. Veterans' rehabilitation by this kind of training is a goal of contractors.

The "GI Bill of Rights" includes educational provisions for practically all veterans of this war with honorable discharges. With liberal provision it offers one year of government-financed education in regularly established schools, including vocational training institutions, with the government paying a maximum of $500 per annum for tuition and other fees and subsistence allowances of $50 monthly for a

(Continued on page 46)

A Preface to POSTWAR PLANNING

Part VI—Cut-Backs and Reconversion

Will military and governmental authorities team up for orderly contract termination and reconversion, or continue to procrastinate on formulating basic policies which alone can save the industry from chaos?

By GEORGE E. HADDAWAY

ONE morning recently U. S. Navy officials walked into the Brewster plant on Long Island and told the company they were through building Corsairs as of date. This abrupt cancellation of the Brewster contract, without warning, served as a vivid reminder that anything can happen — and does happen — when there's no adequate termination and reconversion policy. Why was there no advance notice about the cancellation? Are future cutbacks to be handled in the same high-handed manner? There is serious cause for alarm in this kind of unpremeditated action.

Some observers argue that the Brewster case cannot be considered typical because the company has been constantly upset with labor dislocations and management troubles. Even miracle-man Henry Kaiser couldn't untangle the mess. But the fact remains, had there been an operative contract termination procedure, the Brewster incident, in which too many innocent people had to suffer for mistakes not of their making, would not have happened. It's a sour note and the resultant reverberations throughout industry are understandable, especially since renegotiation policies, frankly discriminatory against aviation, do not permit creation of adequate capital reserves for the transition from war to peace. Here is the knife poised and ready to cut the jugular vein of American air supremacy, without which there can be no future security, no keeping of the peace after it has been won. Knock out the American aviation industry and you blast away the props that alone support the blind hope of humanity for the end of aggression.

Postwar Air Power Vital

It's not just a matter of profits, or labor, or taxes, or even national economy. It's simply a matter of making up our minds whether we return to pre-Pearl Harbor stupidity, open to attack from every direction on the globe, or whether we maintain our hard-earned air superiority, possible only by maintenance of a powerful aviation industry. Has the nation learned at last that prevention costs less than the cure, not only in dollars but in blood and tears? We seriously doubt it.

Aviation's dilemma is in not knowing what to expect. With comparatively low financial reserves, the industry shudders to think what can happen when the cut-backs start rolling. Our military air forces are reaching peak strength. The Brewster case is purely symptomatic and so long as officialdom dilly-dallys around without a practical and clean-cut termination policy and a *modus operandi* for speedy reconversion, the nearer we come to chaos.

There is not one sound reason for the delay. Last February Bernard M. Baruch and John M. Hancock sent their report on war and postwar adjustment policies to the White House. Their report is an intelligent, though broad, blueprint for the orderly demobilization of industry. To avoid being caught unprepared by a sudden collapse of Germany, the report recommends that the Armed Services and the Federal war agencies co-operate in the immediate preparation of an "X Day Reconversion Plan" based on the assumed defeat of Germany.

Now that the invasion of Western Europe has changed from plan to fact, now that it is clearly written and unmistakably plain there will be no turning back until the Hitlerites capitulate, the Baruch Report takes on additional significance. The "X Day" plan basically calls for the immediate unification of Government forces dealing with the human problems of demobilization on two fronts — the Executive and Congress. But time goes on and at this writing there is little evidence of establishing over-all direction, eliminating overlappings between the hodge-podge of Federal agencies or making certain that no problems fall undone between the agencies.

Progress Slow

It is true there are a few congressional committees now interested in these complex problems as well as many agencies beginning to show an interest in the fundamentals, although centralization and basic policy are notably absent.

One optimistic note insofar as reconversion is concerned was sounded in June when Chairman Donald M. Nelson announced relaxation of War Production Board controls on aluminum and gave permission to industry to order machines and tools they need for peacetime production.

Simultaneously, permission was granted for industry to build a single working model of any planned postwar product, whether an airplane, a vacuum cleaner, an automobile or frying pan.

These moves do not point up increased civilian output while the war is still going on but reflect a trend toward protecting the whole economy by lifting certain controls and restrictions "no longer necessary to protect war production."

Nelson outlined these three steps designed to assist industry's planning and preparations for the reconversion period:

(1) Revocation of WPB order restricting aluminum and magnesium to military uses; authorization of WPB

regional offices to grant industry use of these metals for consumer goods wherever manpower is available.

(2) Effective July 1, authorized manufacturers to place their orders for machinery, tools and dies needed in postwar production so long as war orders are not interfered with.

(3) Announced preparation of a new order that will permit manufacturers to build one working model of any product planned for postwar production.

Additional optimism in the reconversion department derives from Congressional interest in a policy-making surplus property bill, details of which have been drafted by various committees working with SWPA Administrator Will Clayton. WPB and Metals Reserve Corporation are already engaged in the process of moving surplus materials while Maury Maverick's Smaller War Plants Corporation is working diligently in the interests of small companies, mainly sub-contractors, whose problems of reconversion are legion.

June also witnessed the long-awaited statement of policy and uniform clause for termination of sub-contracts, substantially providing the same terms given earlier this year to prime contractors. But all sub-contractors know full well that their vital requirements —direct negotiation with the government, financial help during transition, etc.—still depend on legislation that hasn't been passed into law. But the new clause is a step forward, providing a measure of relief from unjust and noxious clauses in termination contracts imposed by prime contractors.

These recent developments are commendable but are meaningless without a master plan that deals in the fundamentals brilliantly set forth in the Baruch Report.

Aviation's "Explosion"

We pointed out above that aviation is particularly vulnerable because of comparatively low financial reserves. Washington must remember that contract termination and reconversion problems in the aviation industry are far more acute and perplexing than in any other industry. Mushrooming overnight from the fortieth industry in size to the largest in the world, there is little wonder that aviation ponders its fate when the cutbacks come.

Remember the classic remark going the rounds last year to the effect that aviation didn't expand—it exploded; —a popular catch-phrase but it failed to connote or describe, even remotely, the miracle performed by the aviation industry. The impossible was accomplished in spite of problems of such magnitude, it's difficult for the people who lived through the nightmare to understand how it happened with so few bloody noses and cases of Trumanitis.

Kicked around until after the collapse of France, the industry in 1940 produced about 6,000 civilian and military airplanes, mostly small stuff and foreign orders. This year production will reach 100,000 military airplanes, mostly large, multi-engine equipment.

Don't think for a minute the industry is sitting around basking in the sunlight of this historic accomplishment. If the war news is good from France, Italy, Russia, the Pacific and India, it's merely an incentive for greater production and effort in the aviation industry, whose leaders will tell you in emphatic terms that the war isn't won yet, that they are damn well out to get this dirty business over with just as soon as humanly possible. Their discussions of the postwar era are limited largely to unanimous appeals for intelligent measures that will guarantee a strong and stable aviation industry as the nation's best insurance policy against similar holocausts to this one and a hedge against any recurrence of the present unnatural and costly "explosion."

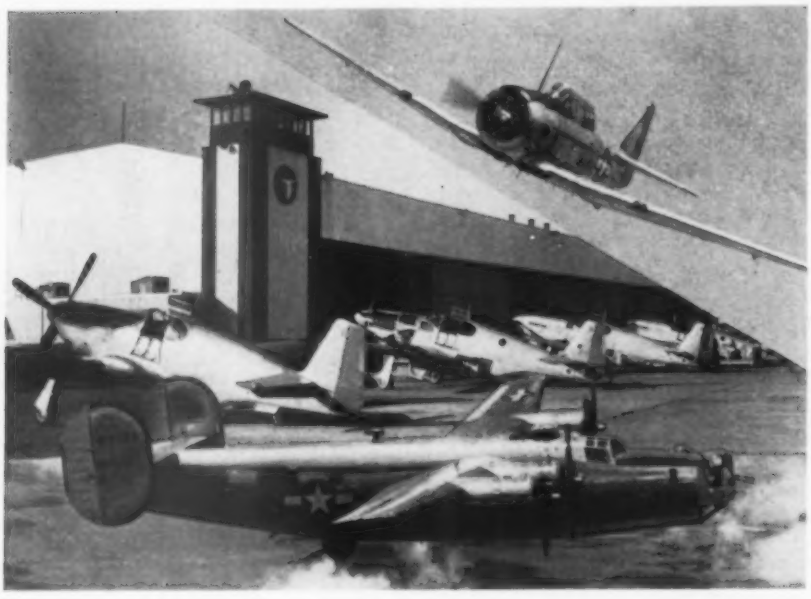
Industry executives are the first to admit that there will be no market for the terrific production now flowing from the assembly lines every month, or a place in the aviation industry for the millions of workers now engaged. It doesn't require the services of a longhaired New Deal economist to figure that one out.

But there is a minimum degree of demobilization of the industry below which the national security would be in jeopardy. And the deflation must be gradual rather than sudden, planned rather than haphazard, with all emphasis on financial stability and technical superiority at any price.

We may be bold to assume that the United States will maintain a strong air arm and a global air force for years to come. It will require a healthy industry to produce the equipment for that air force and to support research, engineering and production genius of the quality and in the quantity necessary for keeping the hard earned peace.

As yet there are no concrete assurances, no definite policies and very little legislation reflecting a desire on the part of the present administration to maintain a virile and elastic postwar aviation industry. There is a serious shortage of advance planning of the kind that will ward off chaotic conditions which might easily develop overnight during the final months of approaching victory whether victory comes in one year or five. Additional delay in setting up intelligent blueprints for contract terminations and reconversion will only serve to dissipate the fruit of victory and sow the seed for future wars. ★ ★ ★

WITHOUT WARNING



Typical of the aircraft industry in Texas is North American's Dallas factory. It manufactures three types (at left): P-51 Mustangs, B-24 Liberators and AT-6 Texans.

Official statistics reveal giant strides have been made in aviation manufacturing and training in Texas during recent years.

FIGURES TELL TEXAS STORY

OF approximately $13,000,000,000 worth of aircraft contracts in the South and Mid-America, the Texas industry alone holds prime contracts of $2,100,000,000, employs 90,000 workers, and has delivered more than 13,000 military aircraft to the Air Forces and thousands others to the Navy and to Allied nations. In addition, over 3,000 fighters and bombers have been modified at Dallas.

Subcontracts now in effect let by Texas prime contractors total $202,000,000, of which smaller Texas firms have been awarded $85,000,000, or 42 per cent of the total, according to figures released last month by Brigadier General Ray G. Harris, supervisor of the Army Air Forces Materiel Command's Midwestern Procurement District.

Going into production of AAF airframes and equipment in the state, General Harris revealed Texas has produced 52,000,000 pounds of heavy bombers, 27,000,000 pounds of trainers, 4,322,000 pounds of heavy transports and 3,780,000 pounds of fighters. Principal types of aircraft produced in Texas were listed as including B-24 four-engine bomber made by Consolidated Vultee Aircraft Corp., at Fort Worth, and by North American Aviation, Inc., at Dallas; P-51 Mustang fighters made at North American; C-87 four-engine transport made at Consolidated Vultee; AT-6 trainer made at North American, and the AT-10 twin-engine trainer made by Globe Aircraft Corp., at Fort Worth. In addition, and not covered in the AAF report, are Navy SNJ trainers (identical to AT-6) made for the U. S. Navy at North American.

New and secret military planes being manufactured in Texas and not mentioned in the AAF report include three "large" airplanes in engineering and production by Consolidated Vultee at Fort Worth. One of these is a six-engine, 18,000-horsepower transport capable of carrying 400 persons.

Aircraft engines are manufactured near Dallas by Continental Motors Corporation, and the Guiberson Diesel Engine Company of Dallas, which has produced air-cooled Diesel engines for tanks, has intensified its long-time development of air-cooled Diesels for aircraft.

One of the leading subcontracting firms in the Texas aviation industry is Southern Aircraft Corp., near Dallas, which is filling large contracts for un-

(Continued on page 34)

44,958 PILOTS TRAINED BY AAF IN TEXAS

From January 1, 1942, to May 1, 1944, 44,958 pilots, 12,534 bombardiers, 12,706 navigators, 45,248 flexible gunners, 74,022 airplane and engine mechanics, 12,247 pilot training instructors, 1,275 bombardier instructors, 1,372 instrument trainer instructors and 7,500 glider pilots were trained in Texas. . . . In addition, 4,132 flyers have been graduated from an instrument pilot instructors' school and 846 from a fixed gunnery instructors' school, and the AAFTC has processed 135,009 basic soldiers, most of whom progressed into technical or flying training, at two basic training centers in Texas. . . . The Training Command's station list includes sixty separate activities in the Lone Star State, of which twenty-eight are major airfields and fourteen are contract flying schools. They cover 925,000 acres of land involving forty counties.

From raw recruit to finished graduate, an airman need never leave Texas. Take a prospective heavy bomber pilot, for example. He begins with five weeks' basic training at Sheppard Field, takes about twenty-one weeks in a college training detachment at Texas A. & M., and then gets classification and preflight at the Aviation Cadet Center in San Antonio. After ten weeks there, he moves to the primary pilot school at Cuero and then progresses through ten weeks of basic training at Waco Army Air Field, ten weeks of advanced two-engine training at Ellington Field and ten weeks of four-engine specialized training in B-24's at Ft. Worth Army Air Field. Then he's ready to join a combat crew for overseas. We could trace the same comprehensive Texas training for a bombardier, navigator or technician gunner.

As of April 30, 1944, there were 9,282 Army Air Forces Training Command planes of all types in Texas. . . . Texas has felt the weight of over 150,000 tons of bombs dropped by student bombardiers. Exactly 281,705,903 rounds of .30 and .50 calibre ammunition have blasted Texas ground and aerial targets. ★ ★ ★

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EQUIPMENT IN **WORLD-WIDE USE**

TEXAS STORY

(Continued from page 32)

announced assemblies and accessories for several major producers. The Hughes Tool Company of Houston is one of the larger AAF contractors in the state and specializes in landing gear and other major components for airplanes.

In Dallas is the first modification center operated in World War II. A Lockheed Aircraft Corporation operation, it has modified more than 3,000 AAF airplanes, including fighters and bombers of several types.

Of the fifty-six major subcontractors in Texas supplying parts and fabrications to prime airplane contractors in the state, the largest number are in Dallas, thirty-two, and Fort Worth, twelve. Dallas subcontractors employ about 8,800 workers and Fort Worth 597. In addition there as sixty-seven miscellaneous prime contractors directly connected with the warplane or training program. These include engine manufacturers, oil and refining industries, plants making fabrications or parts for airplane producers outside of Texas, and many others. These employ a total of 9,137 persons.

Aircraft plants built outright by the government in Texas have cost $39,000,000, with over $3,000,000 now allocated to be spent under that category. The Defense Plant Corporation has spent approximately $40,000,000 on other aircraft plants with $8,380,000 allocated and still to be spent. This total of $79,000,000 went for buildings, grounds and tools and other equipment.

Figures revealing production of trainers, fighters and bombers by North American at Dallas show how prominently the state has affected national production. In May of 1944, North American's Texas division delivered 646 fly-away airplanes to the Army Air Forces, and is now producing approximately one airplane every forty minutes of the working day. In 1942 the total production of combat (AT-6) trainers in Dallas was more than 3,600. In the first half of 1943, the plant produced more more than 2,600 planes. Beginning in the spring of 1943, production of trainers was reduced in order to initiate production of P-51 fighters in the same plant, but North American is still producing more than half of the combat trainers it was turning out at its peak. In the first five months of 1944, North American delivered over 2,400 flyaway planes to the AAF, of which half were P-51's and B-24 four-engine bombers.

Over 2,000 B-24's and C-87 transports were built by Consolidated Vultee at Fort Worth during the year ended in April, 1944. The Fort Worth factory employs approximately 23,000 workers. Its engineering and production of three new types of airplanes, each as large or larger than the B-24, will be followed early in 1945 by discontinuance of B-24 production. At that time the large plant's facilities will be devoted to the production of the newer types. ★ ★ ★

Nashville's Air Expansion

By A. F. SIMMONS

Right in the front rank of aggressive cities of the South which, looking at tomorrow's aviation horizons, are building and planning today to insure a share in that future, is Nashville.

Before the wartime expansion, Nashville's airport actually had handled 30,000 plane movements in a sixty-day period. Under Mayor Thomas L. Cummings, an air enthusiast, plans call for the handling of 180 plane take-offs and landings per hour. There are to be at least one, possibly four, 10,000-foot landing strips and a passenger ramp 3,000 feet—six city blocks—long.

The proposed terminal of the enlarged field will be only 6.3 miles from the center of the city. The station will have a circular concourse of 100 to 150 feet in diameter. Long wings of the building will extend to the north and south. Mayor Cummings says the plans allow for gradual additions to the station so that the building would seem complete at any time. The terminal unit—two blocks of glass and white marble and expected to cost $1,000,000 when complete—will have a large dining room overlooking the field, coffee shop, 3,000-car parking space, drug store, novelty shop, post office, haberdashery, beauty salon, offices, subterranean baggage and mail rooms and a large mural-map-lined main lobby. On the roof will be a large observation deck. The present facilities represent an investment of between $8,000,000 and $10,000,000, of which $700,000 has been contributed by the city. It is one of the few airports over the country whose operations do not leave a deficit to be met by the city.

Already served by American Airlines, Inc., and Eastern Air Lines on two main routes, Nashville is awaiting approval of the Civil Aeronautics Board on seven additional airline routes which would serve the Tennessee capital. Pennsylvania Central Airlines has applied for a route between Chicago and Miami via Nashville; Colonial Air Lines, Inc., between the Great Lakes and Miami through Nashville; Southern Airways, Inc., has filed application to connect the city with New Orleans on one route and with Savannah, Ga., on another. Delta Airlines has requested permission to fly a Nashville route on a line from New Orleans and Cleveland. Southair, Inc., has filed for feeder lines including two between Memphis and Nashville. Southeastern Greyhound has entered its application for operation of twenty helicopter mail and passenger routes in the South, including Nashville. Southeastern Air Express plans to operate feeder lines also serving Nashville. In addition to these is another to augment the already-established American Airlines service by adding a Detroit to New Orleans route, connecting with South America. The other New Orleans route pending would further tie Nashville into the Latin American service via Pan American Airways. Nashville is also on the proposed American Airlines transoceanic route to London.

Nashville is also planning smaller fields to handle private planes. Air cargo is being given full consideration.

With one of Consolidated Vultee Aircraft Corporation's large plants adjoining their field, Nashvillians feel that their community will share not only in air travel but in airplane manufacture. Some 80 per cent company-owned—the Nashville plant is expected to remain a permanent part of the community and its airport program. In fact, it is expected that within thirty days the central control tower of Berry Field will be erected atop the Convair plant. The airport has expanded beyond sight of the present tower.

The South, which by the impetus of war production has created for itself an increasingly important place in the American industrial scene, has resolved to play an even more important place in the world of tomorrow, in the age of flight. Nashville, with an airport which will be able to handle thirty commercial airliners on its passenger ramp at one time, is ready.

(NOTE: This is another in a series describing airport and air traffic plans of leading cities in the South and Mid-America. Last month's article was devoted to Kansas City, Mo.)

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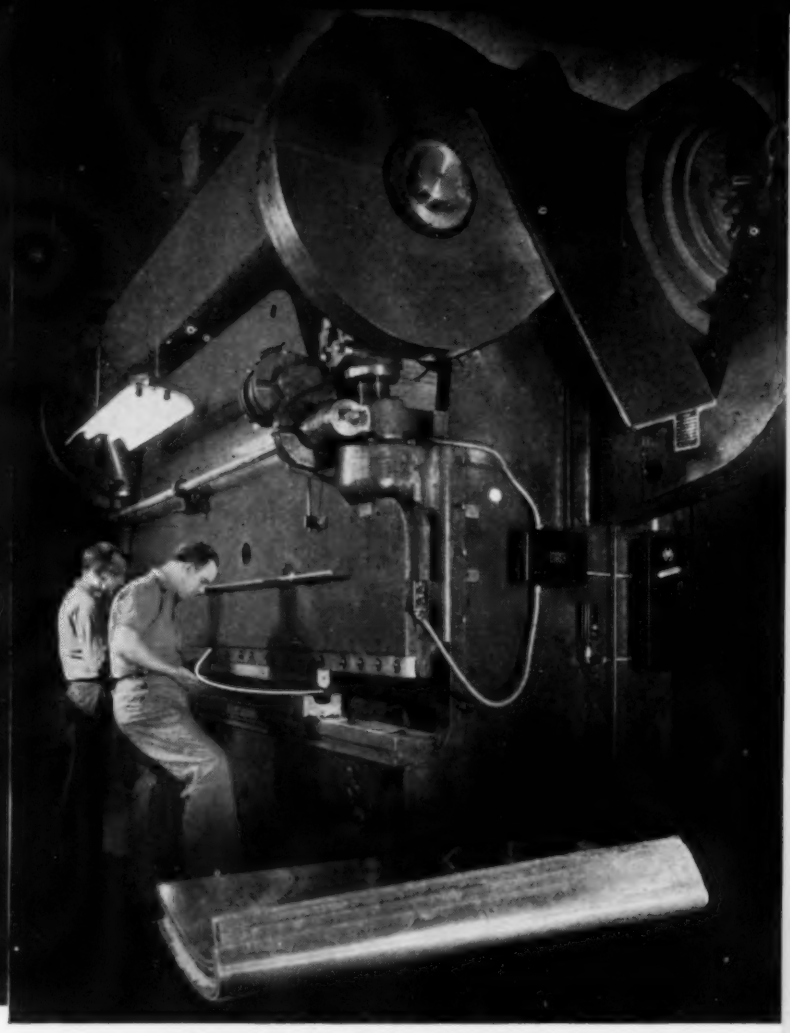

The superior workability of R-301 offers a major advantage in forming curved or flanged parts.

PLANE DESIGNERS wanted a higher strength aluminum alloy for increased performance. Aircraft shopmen wanted an aluminum alloy of good workability in order to reduce production time. Users of aircraft wanted an aluminum alloy with good corrosion resistance, to withstand *any* atmosphere and climate.

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R-301 is a high-strength aluminum alloy core, integrally bonded with a corrosion-resistant, medium-strength aluminum alloy cladding. The core and cladding alloys respond to the same heat treatment—resulting in a final product possessing high strength.

R-301 in the solution heat-treated temper is stable and more workable than any other high-strength aluminum alloy in the corresponding temper—thereby eliminating costly post-forming heat treatment and consequent distortion of aircraft parts.

R-301 is being produced in three tempers, suitable for a wide range of applications. Inquiries are invited. Reynolds Metals Co., Aluminum and Parts Division, Louisville, Kentucky.

Heavy, bending rolls, forming an armor hood for the pilot's compartment. R-301 can be cold-rolled to shape.

R-301 drills and routs to sharp, accurate contour. The hard-surface cladding reduces the hazard of accidental scratching.

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Interception INTERLUDE

Another Indolent Chapter in the Unscientific Method of Navigation

By LARRY J. FISHER
First Lt., CAP TFP

THE fog was lifting. Our pilots were revving up the motors and the observer-navigator of the sister ship and I had put the final touches on our smoothly worked out interception paperwork. Our mission was escort duty on CAP Coastal Patrol.

The Intelligence Officer had given us the details—when and where we were to meet the surface craft. Her identification flags would be Roger William Xray.

The morning sun was just rising, dispelling the fog as we took off, confident in the accuracy of our plotting. The little Voyagers purred contentedly toward the rendezvous over the gray-green water of the Gulf.

Later, a glance at the stop watch. "Here we are," I told the pilot. But no ship was in sight. No boat was silhouetted against the glowing East.

Was our navigation in error? Had we made a mistake in our preflight plotting?

Sorry, friends, but the sordid fact is that the boat's departure had been delayed until the following day — as we learned when we returned to Base that morning.

Screwy introduction to a chapter on Interception? Right! But, after all, I get tired of saying "Our next chapter in The Unscientific Method of Navigation will be—."

Certain people insist on making something complicated out of Interception. Interception boils down to the fact that if you have greater speed and maintain a constant bearing on converging lines, you'll run into your target sooner or later. (If he hasn't changed his mind and course meantime.)

We'll meet that phrase "constant bearing" later on. Meanwhile let's look over interception methods. There are three ways of solving the problem: by visual method, by diagram and by E6-B or similar types of computers.

You've done visual interception (or rather avoided it) in your car when another car approached at an angle.

Interception — Visual

Out of the corner of your eye, you judge whether you'll hit him or miss him. If you held the same speed and angle to him (constant bearing) you probably would have been the "target" at the crash.

By visual method, for intentional airplane or boat interception in the shortest possible time: With the target visible, maintain a constant angle (heading by compass) for several minutes, using a strut or wing as a marker.

If the target appears to be getting ahead of the marker, you are cutting in too quickly. If the target appears to be moving backwards, you are too nearly parallel to his course and will not intercept him.

However, if the target stays at the same spot on your marker, the heading which you are flying is correct and you will intercept him in the shortest possible time. In short, you are maintaining the best relative bearing to his course which is the ideal constant bearing.

In this chapter we are assuming that conditions remain the same throughout. If the target changes course or the wind changes, it is necessary to entirely rework the interception.

And that will be your problem.

Interception — Graphic Solution

Once again we meet our old friend and three-sided companion, the triangle of velocities. We know him well enough by now to call him by his first names of (1) wind side, (2) dotted airspeed — true heading side and (3) solid line true course—ground speed side.

Our problem: The Target's course is 270 degrees, his airspeed is 100 mph. The wind is *from* 60 degrees at 30 mph.

To simplify the problem we'll assume that he is reported over George's (a local beer joint) at the time we take off from our Base to intercept him. His true course and airspeed are known.

(Warning: Use a big sheet of paper for working this one.)

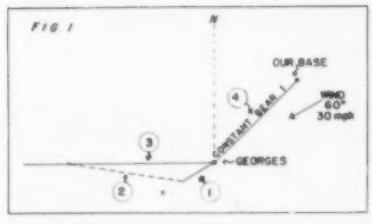


FIG. 1

1. Pick a spot towards bottom right hand side of paper and mark it for George's. Lay off target's course (270 deg.) from there, indefinite length. Lay off wind, *from* 60 degrees, 30 mph.

2. From end of wind line, swing target's airspeed (100 mph) to intersect true course line. (Use a dotted line for airspeed.) Measure angle for target's true heading and find 279 degrees.

3. Measure along true course line from George's to intersection above and find target's groundspeed 124 mph.

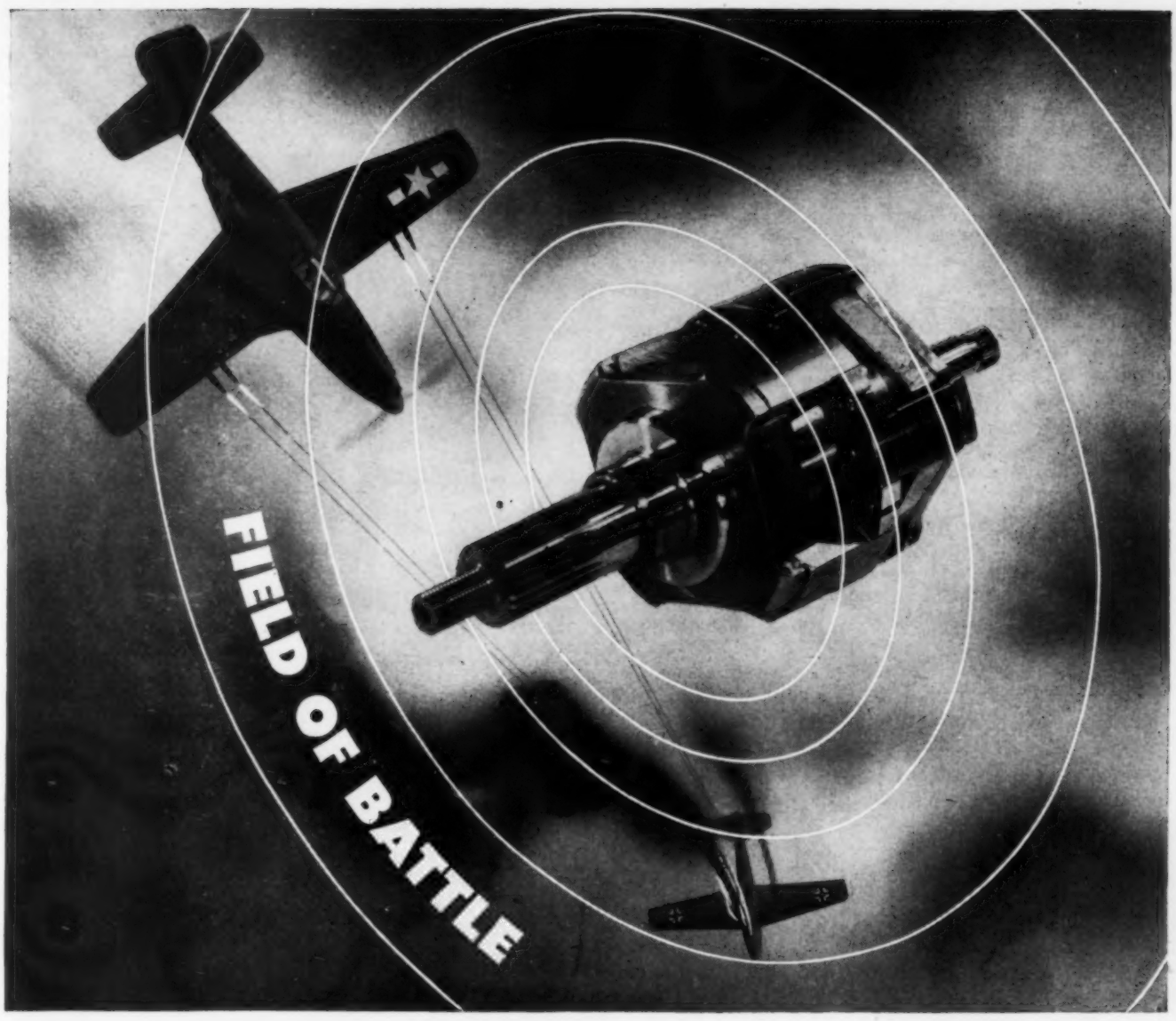
George's bears 45 degrees from our base and the distance apart is 100 miles.

4. Lay off line (100 miles to scale) in the direction of 45 degrees (northeast) from George's. At the northeast end of this line, we locate our own BASE.

This 45 degree line is the Constant Bearing and we'll call it CB No. 1 for convenience. It's a handy gadget as we will see. Think of it as the distance you and the target are apart and the angle you make when the chase begins.

As usual, we'll figure on an hourly basis (with no double pay for overtime on this one). We're now about to erect a perpendicular on an angle (or

(Continued on page 40)



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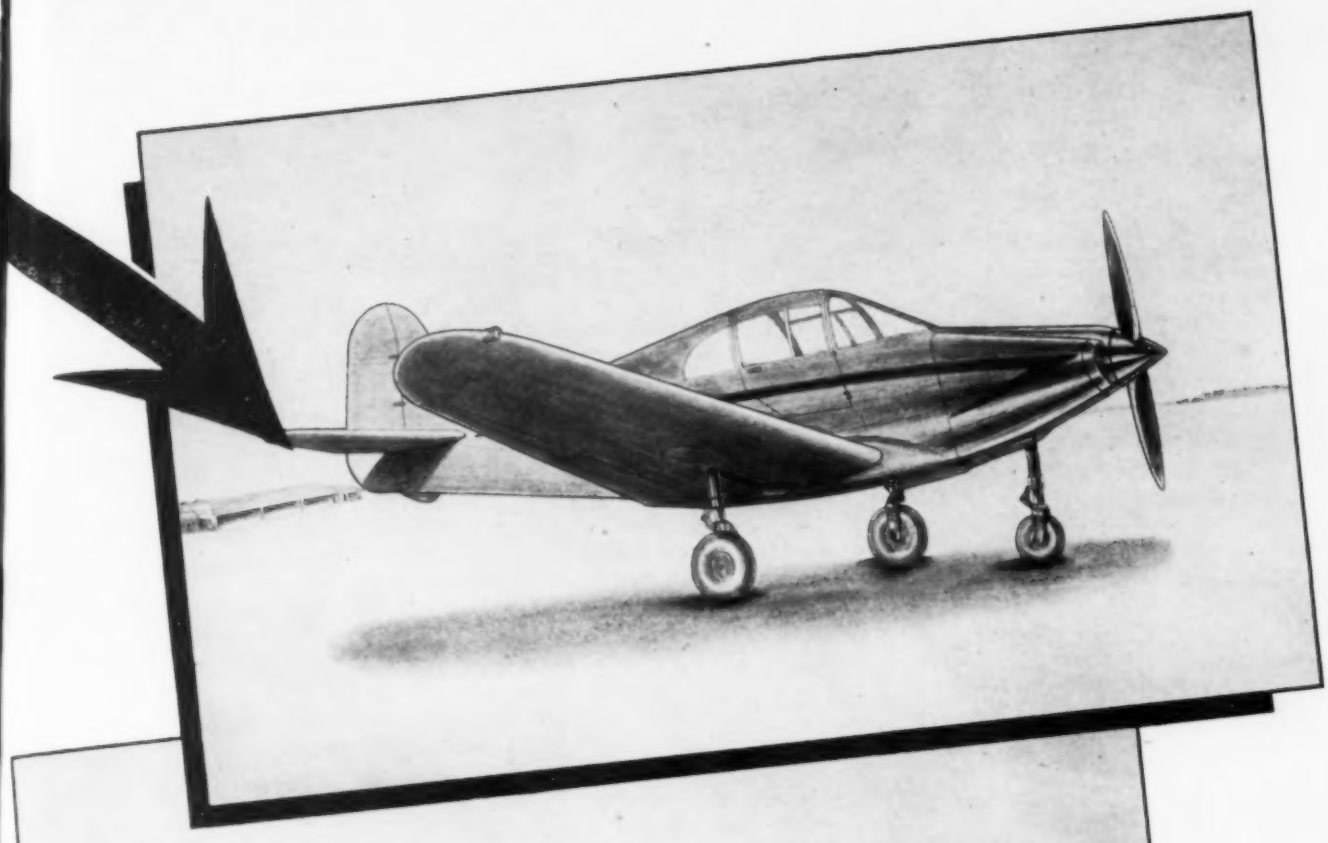
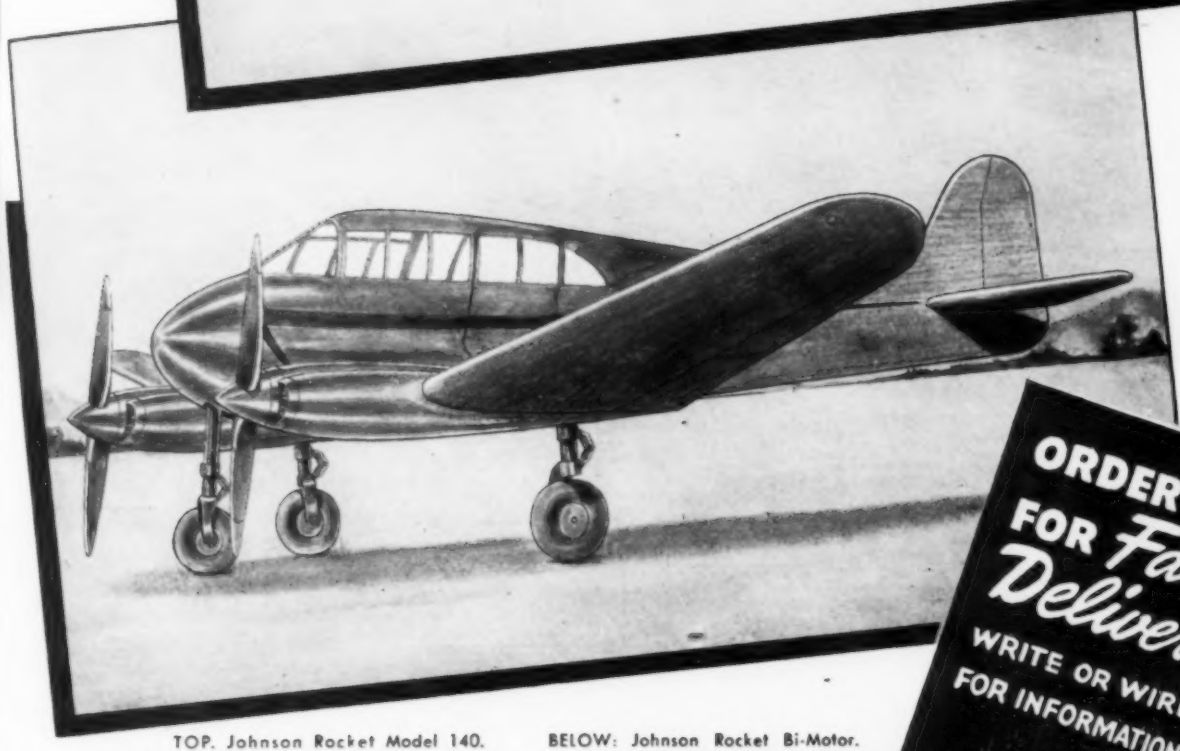
Johnson Rockets are completely equipped—all instruments—two-way radio—controllable pitch propellers on both models. No extras to buy!





TOP. Johnson Rocket Model 140. Two-place, side-by-side, low-wing monoplane powered with 140 H.P. Continental 6-cylinder engine. Cruising speed (est.) 175 M.P.H.

BELOW: Johnson Rocket Bi-Motor. Six-place, low-wing monoplane powered with two 220 H.P. Continental or Lycoming engines. Cruising speed (est.) 215 M.P.H.

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INTERCEPTION

(Continued from page 36)

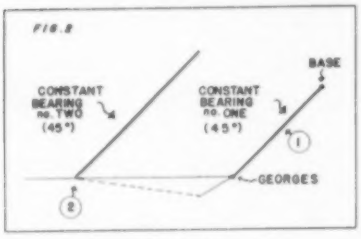

FIG. 2

something) from the target's one hour's flying point—that is, at the point where his airspeed line intersected his true course.

2. At the target's one hour flying point, plot a *second* constant bearing line. Since the first CB line (1) was 45 degrees, this one will be the same angle and direction. Extend it out for indefinite length. This is a work line; call it Constant Bearing No. 2 or nickname it CB No. 2 for all I care.

The same wind is assumed at our base. Our interceptor plane has an airspeed of 140 mph. (Hot dog! I finally got out of the put-put class!)

Now we need to lay off our own triangle to find the interceptor's ground speed, true heading and *true course* to crash into the target. Like the old song, we don't know where we're going but we'd better figure it out.

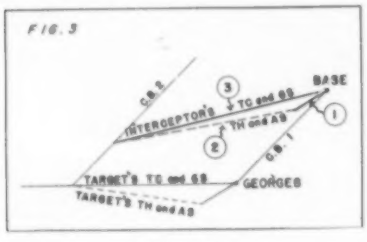

FIG. 3

1. From Base, lay off wind *(from* 60 degrees, 30 mph).

2. Swing our airspeed (140 mph) to intersect—what? Not knowing the direction to target, we have no true course.

Ah! A smart class I've got. That's right, swing the dotted airspeed line to intersect the work line, alias Constant Bearing No. 2. Measure airspeed line and find true heading (259 degrees) to point of interception. Now we have two sides to our triangle.

3. To make the third side, connect Base with the intersection (step 2 above) and find true course of interceptor to intercept is 256 degrees. Measure length for ground speed and find 168 mph.

Now we've found true courses, true headings and ground speeds for both ships. All that remains is to

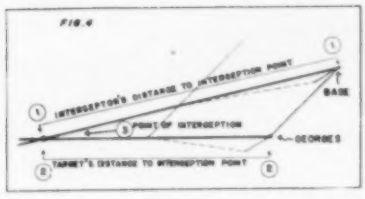

FIG. 4

find the flying time and distance to point of interception on our "collision" course.

1. Extend interceptor's true course —ground speed line (1) on out (to the left in this case) to intersect the target's true-course-ground speed line (2) and find the point of interception where they run into each other at 3. Call it PI for short.

An easy way to remember *which* lines to extend is by thinking that *both ground speed lines must cross* at PI.

We're interested in the *distance* to intercept so measure from George's to PI for the target's distance (2 to 2) and find 216 miles. Measure from Base to PI (1 to 1) for your distance and find 294 miles.

Knowing both ground speeds, the easiest way to figure out the *time* of interception is to use your computer. The answer is one hour and 45 minutes.

Don't tell me. I know what happened when you attempted to extend the lines in figure 4. You ran out of paper. At least, that's what always happens to me. I was very happy to discover a neat little formula that saves reworking the problem or pasting on additional paper.

Giving due credit to TM 1 dash 205, here it is in my Unscientific language:

TO FIND TIME AND DISTANCE TO INTERCEPT:

From the length of constant bearing No. 1 (100 miles) subtract the length of constant bearing No. 2 (43 miles) and find 57. This 57 is the Rate of Closure, a nice phrase which I won't attempt to explain. (My old customers know why—I can't.) I'm satisfied that it works. Abbreviated R/C. To be a little more specific, however, let's look at figure 5.

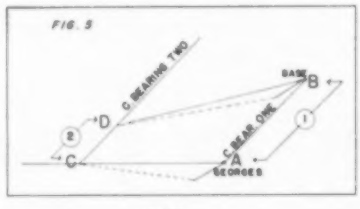

FIG. 5

1. Constant Bearing No. 1 (George's to Base) A to B.

2. Constant Bearing No. 2: Call it C to D.

(a) Subtract C-D (43 miles) from A-B (100 miles) and find Rate of Closure, R/C-57.

(b) Divide the R/C 57 into the *first* Constant Bearing (A-B, 100 miles) and find 1.75 hours.

(c) Multiply the fraction of the hour, .75 by 60 and find 45 minutes. Total time to intercept then is one hour and 45 minutes.

In case I made myself as clear as a ration point schedule or a priority application on that one, here's an easier way to do it. Subtract CB No. 2 from CB No. 1, as above and find R/C 57.

Then, set the hour arrow of your computer on 57. Since the length of the *first* constant bearing is 100 miles, locate 100 miles on outside scale of computer and below it, on inner-inner scale (the hour scale) read one hour and 45 minutes.

Since you know ground speeds of interceptor and target and the time (one hour 45 min.) it's easy to figure the *distance* to intercept on your computer. Or multiply the ground speed by the time to find distance.

As you probably found out it requires too much paper or else too small a scale to extend the ground speed lines as we did in figure 4. So our thanks to TM 1 dash 205 for showing us the Rate of Closure Method. With it only a plotting of one hour's flying is needed. Hence a larger and consequently more accurate scale may be used.

Interception — E6-B and Similar Computers

Comes now the frank admission that the graphic method is more accurate than the E6-B solution for airplane-airplane interception but a reasonably satisfactory answer may be worked on the computer.

The disadvantage is caused because such a small scale must be used on the computer. However on airplane-surface ship interceptions, which we'll go into later, the E6-B is highly satisfactory.

But take your little wonder computer in hand and follow through. At last, you're gonna get to use the square grid side of the slider, marked "400" at the top edge.

We'll use the same dope as in the preceding problem. For these examples, on the "400" side of the slider, each *small* square will represent 10 miles. Thus the printed figure 10 (on the vertical center line) will be 100 miles; 20 will be 150 miles and so on.

1. With the square grid side of the slider in any position (for example, with 30 on the center dot) set wind

(Continued on page 42)

Dry run Susie

Around the big training hangar at Lockheed's Service School they call it "Dry Run Susie"—an accurate replica of the P-38 cockpit, with instruments, gauges and controls all in their proper places. A working textbook to show military student mechanics the operating and maintenance characteristics of America's most versatile fighting plane.

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Lockheed will produce military planes and train the men to maintain them as long as there is a need. Victory must be won before the "air age" of peace can begin. But when it comes, Lockheed will be part of it—building planes, getting them ready to fly and keeping them ready to fly.

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INTERCEPTION

(Continued from page 40)

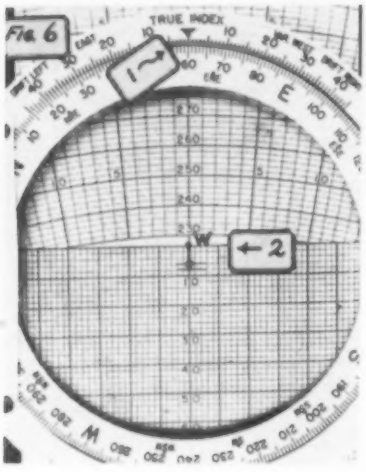

FIG. 6

direction, 60 degrees on the True Index.

2. Plot up three small squares (30 mph velocity) *into* the wind, toward top of computer. Mark this point "W" for "wind."

We might as well take time out here and point out the need for extreme accuracy in the placing of these dots. My suggestion is to put an ink dot on the exact spot, then draw lines to it with pencil. For ordinary problems a pencil mark is good enough for making wind crosses, etc., but a soft pencil dot is too broad for these interception computations.

Fountain pen ink will do okay for the dots and will erase easily but I don't believe ink lines would be helpful to your computer's complexion.

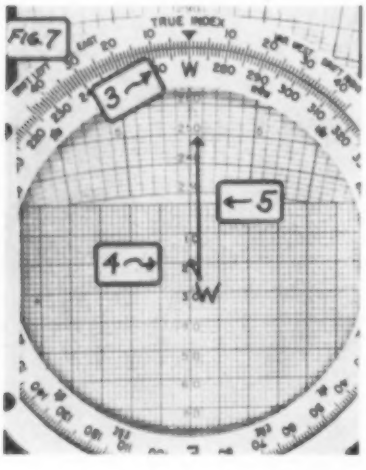

FIG. 7

3. Rotate window to set target's true course, 270 degrees (West) to true index.

4. Slide slider to put target's air speed (100 mph) on center dot. With each small square representing 10 miles, the printed figure 20 (representing 100 miles) will be on center dot.

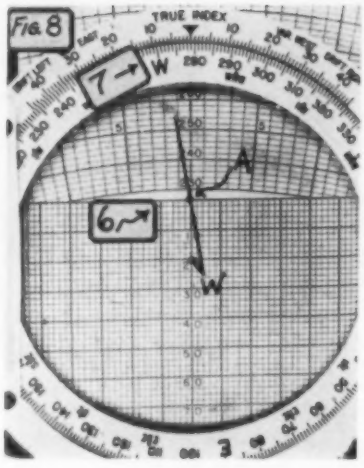

FIG. 8

5. From "W" dot, draw a line of indefinite length towards the *top* of the computer.

6. Rotate window until this line (step 5 above) crosses the vertical center line at the top of the square grid. Mark this point as "A".

7. Read target's true *heading* at index, 279 degrees which completes all the dope we need on the target. Next we'll go through the same steps (3 through 7) to get the low down on the interceptor. Here we go.

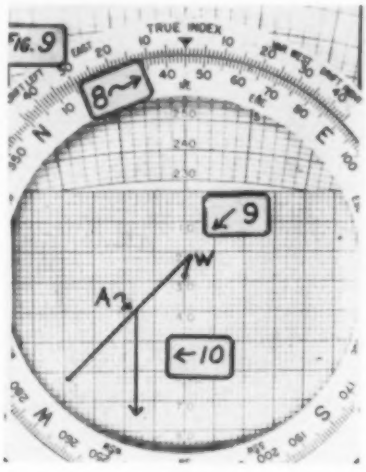

FIG. 9

8. We know the bearing from George's to Base is 45 degrees. Set this constant bearing to true index.

9. Set the slider to put the interceptor's airspeed to 140 mph on center dot. (Since the printed 30 would represent 150 miles, our 140 will be one small square less.)

10. From "A" (step 6 above) draw a line of indefinite length towards *bottom* of computer.

11. Rotate window until this line (step 10 above) crosses the vertical center line at the top of the square grid. Mark this point "B".

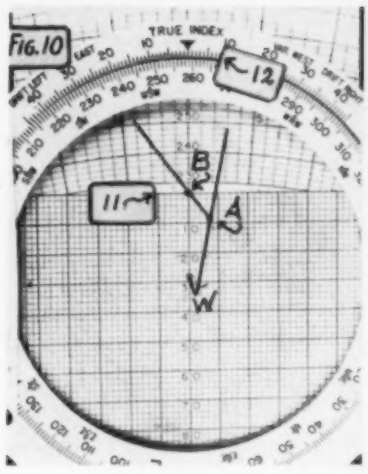

FIG. 10

12. Read interceptor's true heading 259 degrees at index.

To summarize our SOP so far we have (a) laid off the wind (steps 1 and 2); (b) laid off the target's course and found his true heading (steps 6 and 7) and (c) found the interceptor's true heading (step 8 through 12).

Incidentally, with the target's heading set on the index his ground speed may be read — count up from "W" to "A"; with the interceptor's heading set on true index, find his ground speed by counting up from "W" to "B". In either case, just use the square grid as your ruler.

Rate of Closure

Hours of thought and many bottles of brew go into making our Unscientific Method of Navigation as painless and effortless for you as possible. You won't have to even turn back a page to our previous learned exposition of R/C for we'll go through it again as it applies to the E6-B.

Rate of Closure is really a handy gadget, as previously mentioned. It's simply the speed at which the two crates are aproaching each other and means inevitable collision if both hold to the same course (along with a few other ifs).

13. *To find rate of closure:* Rotate the window to any point where the length of the A-B line may be read conveniently and find 57 by approximation. (That's what got me down trying to learn to use a slide rule — that approximation business. But since we figured out in the graphic solution that the R/C was 57, it makes it easier to approximate it now.)

Anyhow, your Rate of Closure is 57. By dividing this into your first constant bearing (which is nothing more than the distance you and the target were apart when the chase began) 100 miles and find 1.75 hours.

(Continued on page 46)

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IF YOU'LL imagine an *invisible* searchlight beam, you'll have a good picture of how Klystron-generated radio waves can be directed into a narrow "pencil" of energy.

▶ This direction is accomplished by suitable reflectors. The beam of ultra-high-frequency waves travels in a straight line, and it can pierce fog, smoke, and clouds which would stop a light beam.

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The original Johnson "Rocket" (at left), powered with a 125 hp. Lycoming horizontally opposed engine, was test-flown November 23, 1942, and has logged over 300 hours of severe test flying. Its designer claims that the "Rocket" is the world's fastest airplane for horsepower, providing 155 mph. cruising speed with a 125 hp. engine. He estimates a cruising speed of 175 mph. for Model 140, with a 140 hp. flat engine.

JOHNSON

JOHNSON 'ROCKETS' IN LIMITED PRODUCTION

JOHNSON Aircrafts, Inc., Ft. Worth, has announced "limited" production of postwar models in view of the availability of materials heretofore frozen for war production. With the first production models scheduled for fall delivery, Johnson will produce two designs: a bimotor "executive" or "feeder" type, six-place monoplane powered with two 220-hp. Continental or Lycoming flat engines; and a single-engine, two-place private owner type powered with a 140-hp. Continental six-cylinder, horizontally-opposed engine. Both airplanes will be equipped with retracting tricycle landing gear and Roby controllable pitch blade propellers.

Both designs follow closely the basic lines of the original Johnson "Rocket" pictured herewith. This airplane has been flying for over a year and demonstrated widely as a postwar model. It is powered with a 125-hp. Lycoming engine, which provides a cruising speed of 155 miles per hour. Its successor, the Model 140, boasts four inches wider cabin, an additional fifteen horsepower, tricycle gear and controllable pitch prop. All other dimensions, including airfoil, are identical.

The company is rushing their twin engine airplane into production primarily as a bid to the anticipated "feeder" airline market, for booming charter services and for high performance executive transportation. Continental or Lycoming flat engines developing 220 hp. each will be optional. This model will probably sell in the

(Continued on page 46)

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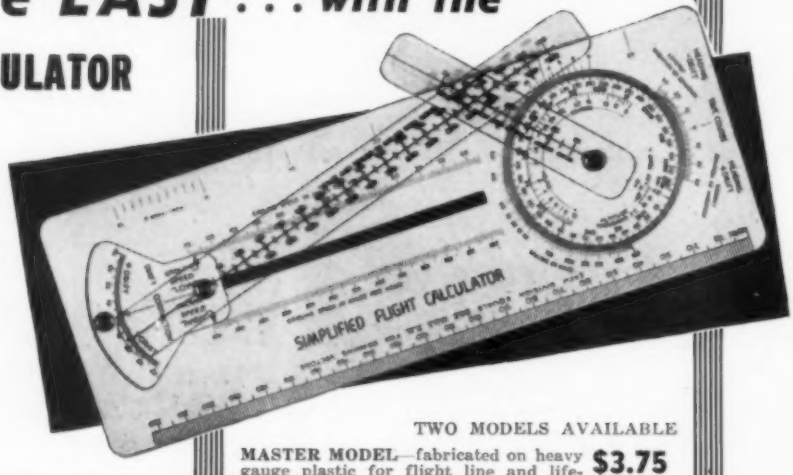

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CONTRACT SCHOOLS

(Continued from page 29

veteran with no dependents, and $75 for those with dependents. In the case of a veteran who entered the service before he was twenty-five, a complete four-year college course would be available provided the veteran qualified and made proper progress.

It further provides that the Administrator from time to time shall secure from the appropriate agency of each state a list of all schools or institutions equipped to supply education or training within such jurisdiction, which schools and institutions as may be recognized by the Administrator, shall be deemed qualified to enroll eligible veterans. From this list of qualified schools the veteran may elect which one he will attend, and must do this not later than two years after his discharge or the termination of the war, whichever is the later date.

Of course, the schools themselves have a selling job to do in this case. They should contact the responsible officials in their area and present their qualifications. After they become recognized they will have to make their facilities known to eligible veterans, but the official recognition must come first. Congressmen from the districts where these schools are located can assist in getting the ball rolling.

A plan which will well bear watching has been introduced by the Dallas Aviation School and Air College, operated by Major W. F. Long. This school is now offering an "Aviation Acquaintance Course" during the summer months which can be completed in six or eight weeks.

School teachers are showing a marked interest in this new course, and why not? One prominent educator estimates that less than one per cent of the teachers giving instruction in preflight courses in public schools at the present time have had any practical aviation experience.

Some of the operators of these ATS schools have records of achievement not only in training, but in transport, branch line, fixed base operation, and manufacturing. Some of them will be able to shape worthwhile postwar futures elsewhere in aviation as shown by their individual past records. They should be given every consideration in attempting to do so for they have performed a service for the nation which can never adequately be recognized. Aviation needs such men.

However, most of the schools are located in areas not lending themselves to such other activities, but ideally situated and equipped to do training. They are a national asset. The experienced personnel and management —buildings, fields and equipment— are awaiting the opportunity to do whatever training jobs need to be done in this country with efficiency, safety, and at minimum cost. Some have closed and others will follow soon, resulting in the disintegration of the expert and experienced staffs which could not be assembled again for years. ★ ★ ★

JOHNSON ROCKETS

(Continued from page 44)

$12,000 range, Johnson predicts, while the single-engine two-place craft will be in the $4,500 class.

Johnson has long been associated with the design and construction of high performance aircraft for the private owner field. He assisted in the development of the Alexander "Bullet" at the Alexander Aircraft Corporation, Colorado Springs, back in 1927-1928. He was later associated with the Culver Aircraft Company, Bennett Aircraft Corporation and the Globe Aircraft Corporation, where he was instrumental in developing the Globe "Swift". In 1942 he left that concern to form his own company and to work on the two designs now scheduled for limited production.

A separate sales organization to be known as the Rocket Aircraft Sales Company, headed by W. R. (Pup) Thomas, Lubbock, Texas, has been organized and has taken over exclusive distribution of Johnson's products in the United States. ★ ★ ★

INTERCEPTION

(Continued from page 42)

The .75 is a fractional part of an hour, multiply by 60 and get 45 minutes. Total, one hour and 45 minutes to point of interception.

But what have you got the other side of the E6-B for if it isn't to eliminate Mathematical Indigestion? Instead of the work above set the hour arrow opposite the R/C 57; look for the CB distance (100 miles) on outside (miles) scale and below it, on the inner-inner scale, read one hour 45 minutes and there you are without exertion.

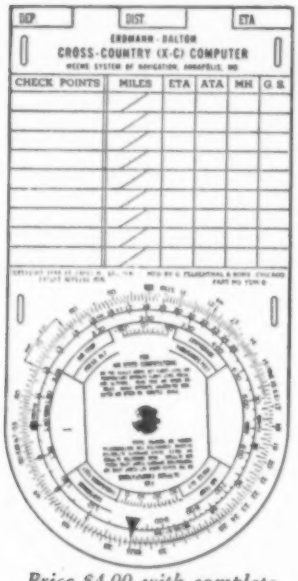
To find the target's distance to intercept: Opposite the hour arrow set the target's ground speed, 124 mph. Opposite one hour 45 minutes read 294 miles on outside scale.

To find Interceptor's distance to intercept: Opposite the hour arrow set the interceptor's ground speed, 140 mph. Opposite one hour 45 minutes, read 294 miles on outside scale.

In a future session we'll take up airplane-boat interception which is practically the same for graphic solution. On the E6-B it's even easier.

Just twirl the window through the above problem a couple of times and I believe you'll encounter no ack-ack in your interception. ★ ★ ★

NOTE: The author wishes to express his thanks to Mr. Paul Higgins, Aeronautical Engineering Department, Texas A. & M. College for his computer solutions; to Lt. J. B. Clark, CAP Texas Forest Patrol, for his excellent photographs and to Otto Ransleben for his appropriate cartoon.



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2. Flying time required to go a given distance, at a known speed.
3. Distance flown in a certain time, at a known speed.
4. Multiplication, division and proportion problems.
5. Fuel consumption problems.
6. Finding true air speed at different altitudes and temperatures.
7. Determination of true altitude above sea level.
8. Conversion of miles per hour to knots, or conversion of distance in statute miles to distance expressed in nautical miles.

The log sheet portion of the X-C is designed primarily for the pilot, who must devote most of his attention to flying and who must keep his navibation log as simple as possible. The log sheet is for keeping in orderly fashion that data essential for cross-country navigation, so that it need not be committed to memory or scrawled illegibly on a chart.

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THE Sky's the Limit

BY BILL GREEN

Let's talk about airports. . . . How we feel about municipal airports. . . . Requirements to make "good" airport vary. . . . Business-like operations would cure many ills.

Airport Development

RIGHT now there is lots of talk about airports now and postwar. Having visited and used a lot of airports here and in other countries, we think a few observations might be apropos.

Airports may be divided into several broad classes:

(1) Municipally owned and managed "airline" type.
(2) Municipally owned and managed "private" type.
(3) Municipally owned "private" type operated by lessee or concessionaire.
(4) Airline owned and managed, open to public.
(5) Privately owned, open to all fixed-base operators and the public.
(6) Privately owned, all other fixed-base operators excluded, but open to the public.
(7) Landing fields where no operations are carried on and no service is available.

In most cases we are opposed to a municipality running more than one municipal airport. This is because airlines seldom come into several different airports in one city; therefore, additional airports would be used largely by private individuals. We believe a city may have to establish a municipal airport to get airline service, but it certainly does not have to establish municipal airports to take care of private aviation.

Where only one municipal airport is available, it is necessary that the management consider how to provide the greatest amount of benefits and services to the public.

Where a number of fixed-base and airline operations are conducted, it is almost essential that the airport be municipally owned to prevent politics and discrimination against or in favor of certain operators. In many cases, the railroads have established union stations apparently with good results and fair and satisfactory treatment to all the roads concerned. However, it may be pointed out that railroads sell only one thing, transportation; whereas the many services, operations, repair stations, etc., that might operate from one large municipal airport might be so varied that no one management could properly evaluate or protect all interests involved. For example, a flight training school does not have the same interest as an airline or a repair station for engines and aircraft, or an instrument and radio repair station, or a charter service. Several of these people actually conflict in their requirements around the field and it becomes quite a problem to keep them all lined up.

These problems have become so acute in many instances that certain fixed-base operators and repair stations, as well as schools, have seen fit to provide themselves with a small privately owned and wholly inadequate field and facilities just to obtain the freedom of movement necessary to conduct their business.

In general, we believe that municipally owned fields should be managed by a municipal manager, if enough business can be developed to pay their way. In larger fields, whether they are self-sustaining or not, they must be run by the municipality in order to provide against unfair practices.

This is not to say that all municipally managed fields are correctly run. They are not. Many municipal airport managers have played all kinds of politics and their fields are avoided by discriminating persons from coast to coast. Some municipal airports, while not maliciously managed, are poorly managed from many points of view. Common criticisms include dirty restrooms—in poor repair; awful restaurants; insufficient seating capacity for passengers; lack of service attendants; poor service; long length of time required to handle paper work; lack of facilities.

For instance, it is a nuisance to fly into a large field like St. Louis or Chicago, have a gas truck come out and gas you up, then have to walk 200 yards or so to an office for your change, when it might have been done by the attendant at the time of fueling.

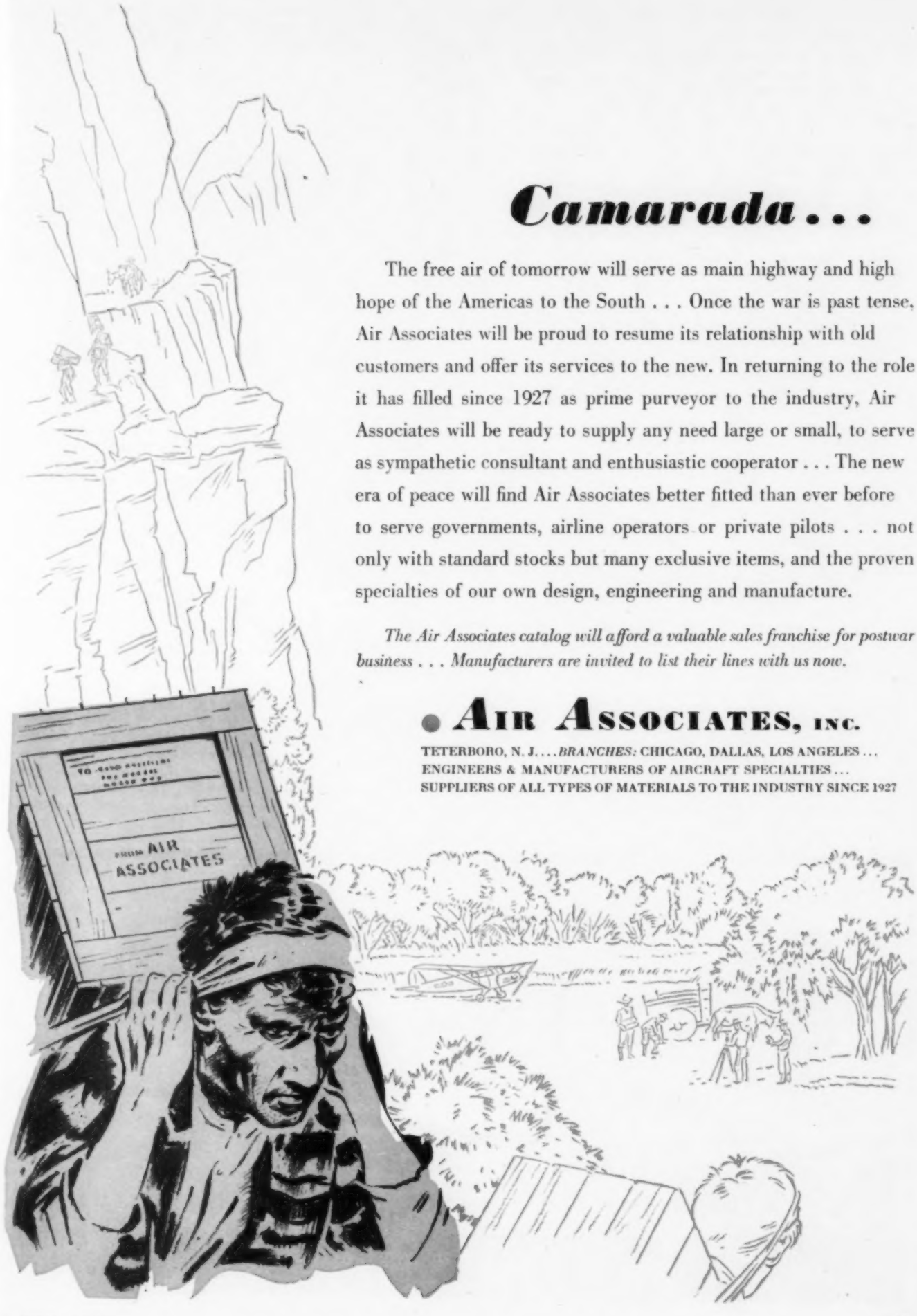
If the field is not to be municipally managed, then there is probably no advantage to the fixed-base operator, or the field operator, for the thing to be municipally owned inasmuch as there is generally some politician in the municipal government who wishes to manipulate it somehow and there is always some local citizen who knows that the airport is municipally owned and who will use that as a lever upon the operator. Since most municipally owned but privately operated airfields are simply cow pastures that have been turned over to aviation, then the operator or lessee might as well obtain the field from the farmer in the first place, unless the municipality is leasing it at a loss. Leasing at a loss is uncalled for.

We believe that airports can be made to pay and airports for private flying should not be municipally owned any more than bus and railroad stations. Flying is a private enterprise and should stand on its own feet. People who own automobiles have never required the city or the government to provide them with storage facilities. They build their own garages, they pay their own way and they don't want the Federal Government or the state and city interfering with them any more than has to be for fire prevention, traffic hazards, etc.

Privately owned and operated fields, open to any fixed-base operators, may be thoroughly satisfactory and we have seen many such fields. In general, however, the field operator apparently wishes to monopolize the business upon that field and, since most such operators are not adequately financed, the service is limited to the very minimum required to keep an airplane moving. Many special services required by completely equipped ships, such as radio and instrument repair, are not available.

We would like to point out to all operators, municipal and otherwise, that competition, instead of dividing the existing business between two agencies, may frequently increase the business sufficiently to take care of many agencies, all with more business than originally existed. We have seen some cases where one local operator, who mismanaged the business, actually caused all local business to be shut down. Many of you readers undoubt-

(Continued on page 50)



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SKY'S THE LIMIT

(Continued from page 48)

edly know of airports that have been abandoned after a number of years of operation. We assume, since aviation is growing, that all facilities are necessary; that if one is abandoned, it is because of some local condition.

Landing fields where no operation is carried on and no service is available, are useful only in an emergency and many people do not like to use such fields. Of course, one at a very remote point in a desert where it would be hazardous to land otherwise, is a great help.

We think many people lose sight of the most desirable feature for a good airport. We would enumerate these requirements in order of importance as follows:

(1) Sufficient all-weather runways in the direction of all prevailing winds and of sufficient lengths to be safe for most kinds of aircraft even when somewhat overloaded.
(2) Sufficient service of every kind normally required.
(3) Hangar space for all comers.
(4) Lights.
(5) Control Tower.
(6) Weather information.
(7) Radio navigational facilities.
(8) Airline terminal facilities, including restaurants, taxi service to town, etc.
(9) Not too great a distance from town.
(10) Decent approaches in every direction for safe operations.
(11) A first-class and satisfactory airport manager.

Since the airport manager can make or break the whole proposition, and since there isn't much chance of finding all of the other facilities if the airport manager is not satisfactory, I have put this item last.

Other people may rate some of these desirable characteristics differently and they may add others. Essentially, not many of us would kick if we had these eleven factors at most airports.

We would not discourage those people who wish to operate airports with only about three or four of these requirements. We have often hangared our ship for a long period at airports that did not have paved runways. We have found sod-fields are easier to land on, require less precision, do not contribute to ground-looping as much as paving does, and so on. Frequently, people who operate paved runway airports do not keep the rest of the field smooth and clear and, therefore, one is limited only to the runways. We like sod airports where one can go anywhere he wishes to, thus avoiding incoming or outgoing planes without holding them up or having to wait themselves. We have been on many airports that did not have all kinds of service and yet were thoroughly satisfactory for our immediate purposes. After all, not every airport can support all kinds of services.

We have been on a lot of fields where there were no terminal facilities, that is, no buildings, no restaurant, etc., but where the operator used one corner of his hangar for his office, waiting room, etc. This works O. K. We are glad to put up with that provided the folks are friendly and not sour-pusses as you so frequently see around airports. Some of these people, undoubtedly, have good reason to have sour-pusses and be cool towards all comers. Although flying is one of the greatest games in the world, it has attracted more than its share of chisellers. Most of us have had unhappy contact with them. However, it should be on the same basis as justice is commonly supposed to be, namely, that a man is a good fellow and customer until proved otherwise. The secret of success employed by many large companies is courtesy and hospitality. It always works. We wish all airport operators knew that. It would help.

We have always believed that free enterprise will provide what is necessary when it can pay its way. We suspect that after the war there will be many new airports established by individuals and that there will be good mechanical service available at every cross road. After all, many of our trained ground crewmen coming back from the war will want something to do in aviation.

We have received a number of interesting letters from our readers in connection with some comments we have made on airplanes and airports. We would appreciate very much receiving letters and comments from anyone. What have you observed about your local airport that you think should be talked about? In some later issue, we will be glad to take up any problems you may suggest.

We believe the airport business is like any other business. If the facilities are provided and the operators use normally accepted policies of courtesy, fair treatment and service, they will eventually be accepted and will pay off. A little discernment and analysis of local problems will undoubtedly result in greater satisfaction everywhere.

Individuals may influence their local airport managements by meeting in groups and presenting calmly and impassionately such ideas as they consider valuable or helpful. Especially at municipal airports it is the customers' duty to contribute suggestions as to service, management and operating policies. ★ ★ ★

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FIRST COMBAT: The June 15 raid on the Japanese home islands was not the first combat action of the B-29's. One of them fought it out with Jap fighters seven weeks earlier.

★ ★ ★

SUPER STRATOBOMBER: First accounts of the action over Yawata where the 20th Air Force crippled Japanese steel production, failed to mention loss of one B-29 over the target. Censors slashed mention of pressurized cabin facilities from the accompanying article. But the loss eventually was listed, and within a week General Electric distributed a story on the B-29's pressurization. GE also took the B-29 above the Army's well-guarded ceiling of "well over 30,000 feet". Said GE: "Turbosuperchargers (two on each engine) supply it with sufficient compressed air to maintain high power at altitudes of 40,000 feet and higher. Turbosuperchargers attached to two of the motors also feed compressed air to the sealed cabin, a small amount of air being sufficient to maintain near-normal atmospheric conditions in the cabin at high altitudes." Crews still carry along masks and the ship carries large quantities of bottled oxygen. In combat, the plane is depressurized quickly, if necessary, and can be repressurized "in an instant."

★ ★ ★

MORE DETAILS REVEALED: Suppliers filled in some of the gaps left by security-minded writers and censors. GE supplemented its pressurized cabin details with a few facts on the B-29's very hush-hush guns and their controls. In telling of the $90,000 worth of GE-designed or manufactured armament, superchargers and "other equipment" that each B-29 carries, GE said the armament consists of "power turrets with multiple gun installations, and the fire control system includes computing gun sights which automatically correct for various factors such as wind and plane velocity **while putting the sight directly on the target.**" . . . Minneapolis-Honeywell Regulator Company revealed its electronic turbo regulator and electronic automatic pilot are on the B-29. The electronic pilot can make over 300 flight corrections per minute — the turbo regulator automatically controls supercharger speeds to boost efficiency and prevent "blow-ups" at excessive impeller speeds above 28,000 RPM's; one knob on the flight engineer's desk controls all turbos simultaneously, equalizing manifold pressures. . . . Bullet-sealing fuel tanks on the B-29 number thirty, says U. S. Rubber, and all rubber in each plane totals nearly 5,000 pounds in weight. The huge tires and tubes are the lightest per pound of load in any plane flying. . . . "Transparent armor" on the Superfortresses, says Libbey-Owens-Ford, includes removable flak-resistant glass panels inserted in front of both pilot and co-pilot when in combat.

SUPERFORTRESS

(Continued from page 25)

co-pilot. The pilot's instrument panel represents a new high in simplicity, having only the flight, manifold pressure and tachometer instruments. It occupies a small space above the rudders and he looks over and beyond it. The co-pilot's board has flight instruments and indicating devices for landing gear, wing flaps and propeller governors. But there are plenty of gadgets and dials for the flight engineer, whose panel contains all necessary engine controls and instruments. Engineer, navigator and radio operator are in a compartment behind the flight deck. Behind them is the bomb bay area, and behind that the gunnery cabin, rear fuselage compartment and finally the tail gunnery cabin. Despite its size, the fuselage has little wasted space.

While being the newest Army airplane in combat, the B-29 is several years old as an airplane and its development dates back more than six years to the winter of 1938, when the Army asked Boeing to submit modification ideas for the B-17. Moreover, the "super" bomber conception dates back even farther, for the B-15, predecessor of today's supers, had established flight records—beginning in 1937. The fact is that quantity production is the "newness"; the design and development have been going on for years. Boeing had been waiting four years when, on January 29, 1940, it received a request from the War Department for bids on an experimental super bomber. Its engineers had already accomplished much in designing what was called the Model 341—a proposed bomber with a gross weight of 73,000 pounds and having tricycle landing gear. But the Army believed Model 341 did not go far enough; a more advanced design was wanted. So a month later the Army revised its specifications, increasing requirements. Most of the original bidders dropped out this time, and Boeing began enlarging Model 341 into Model 345, greatly increasing its weight, range speed, load capacity and ceiling.

Instant approval was obtained and the Army authorized the construction of wind tunnel models and a mock-up, designating Model 345 as XB-29. In August, Boeing was authorized to build three complete XB-29's, and by May 17, 1941, before the first of these was completed, the war was moving so fast the Army ordered the XB-29 into quantity production at Wichita, Kansas. The first flight test was on September 21, 1942.

Today, B-29's are in quantity production at five huge plants—Boeing at Seattle and Renton, Wash., and Wichita, Kansas, Glenn L. Martin at Omaha, Neb., and Bell at Marietta, Ga. The Fisher Body division of General Motors has a major role in fabricating sub-assemblies. In addition, hundreds of sub-contractors, vendors and suppliers are embraced. The Wright engines for B-29's are in mass production at the Dodge plant in Chicago, especially built for this program and the largest single unit manufacturing plant in the world, and Wright Aeronautical Corp., of course, is delivering quantities.

As a big airplane the B-29 possesses many advantages which are boosting production. It has been found to be more readily fabricated for the simple reason that its large subassemblies are easier to build than small ones. Workers have more access, more room for their labors. Boeing capitalized on this from the start, enhancing the advantages through an ingenious system of work simplification. Throughout the original design process, the B-29 had been engineered with a view to facilitating rapid production. The fuselage was broken down into five sections for major assembly. A major consideration of tooling was the method of joining the sections. A unique "production joint" was created wherein the various sections are joined together with bolts, using a torsion wrench, thus eliminating the splicing of beams and skin laps.

Boeing officials say the B-29 has been so efficiently broken down for production that it is being built, pound for pound, much more readily and with fewer manhours than the B-17. Those relatively few now in combat will be followed by a fleet growing more numerous by the hour.

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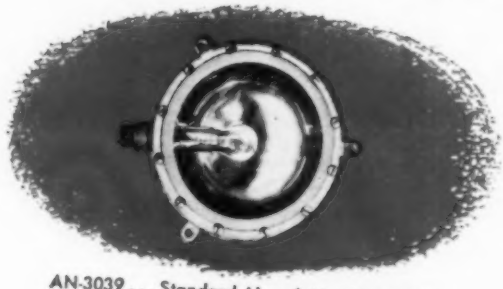

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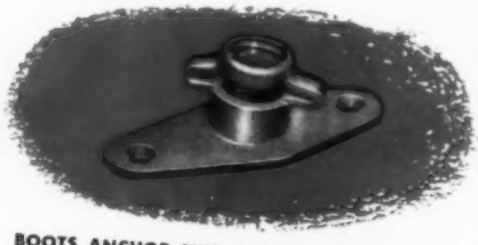

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AIR POWER *In Action*

By TOM ASHLEY

WHILE the world looked on in awe at history's most audacious military operation in the Allied invasion of Northern France last month, the war in the air took on new and compelling significance not in Europe but in the Far East—in the Japanese home islands. Air power had largely accomplished its primary task and was now in the final lap of the European race, but in the Pacific it was just getting under way on an advanced strategic time table which will prove to be as exacting as that now paying off against the Germans. If opening delays during 1942-43 made us late in reaching Normandy and eventually Berlin, a great span of lost time partially will be made up in the drive against Japan, for we are already months ahead of schedules which originally called for an out-and-out European victory before starting large-scale operations in the East.

On June 15 General H. H. Arnold's new 20th Bomber Command bombed Yawata, the Pittsburgh of Japan, and from more than a few Boeing B-29 Superfortresses ton after ton of high explosives dropped to obliterate a large portion of the enemy's steel resources. Why did the B-29's attack at night? Why did they bomb from medium altitude within flak range? Is supply shortage the only reason they failed to follow up with successive bombings? AAF critics will be asking these questions; they should be answered, and probably will be, as soon as security permits. Events should prove the Japanese homeland less difficult to neutralize by air power than Germany. Despite the great distances involved, B-29's operating from Chinese and other bases can inflict on Japanese industry several times the damage caused to comparable German industry by comparable numbers of B-17's operating from Great Britain—because of (1) improved airplane performance, and (2) more highly concentrated industries.

Promise in the East

It is not difficult to understand the promise of a better showing by strategic air power against Japan. For one thing, our air generalship has been sharpened by experience. It will follow the 8th Air Force pattern, generally speaking, but it is practically certain that the 20th will not waste as much time and force against Japan as the 8th wasted against Germany—"waste", that is, its time and strength against targets other than the enemy air force and aircraft industry, which are the 20th's No. 1 objective. The record will illustrate the point: The 8th's first mission was on August 17, 1942, but it was not until February 20, 1944, that the 8th directed its full force in continuous assaults against German air strength. During all the interim it was the victim of more than one circumstance sufficient to delay its rightful employment. When finally the 8th got into high gear, it proved decisive and largely crippled both the German Air Force and aircraft industry within one short week. In the air war against Japan, few, if any, of these debilitating circumstances will plague the 20th Bomber Command. For example, it will not have to deal with enemy submarine pens as did the 8th; it will not be bled by a Chinese equivalent of our African campaign; it will not be necessary for General Arnold to argue air power's case at a Chinese version of the Casablanca conference; it will not be necessary to dilly dally around with RAF whims and fancies affecting AAF strategy. We are becoming increasingly prepared for major air operations in the East—our industry is now geared less to trainers and a variety of fighters and more closely to heavy bomber and long-range fighter production; the Navy is far ahead of schedule in its air and sea campaign directed toward China's mainland and Japan's island outposts (approximately 100 U. S. carriers are now

LOSSES IN THE AIR WAR
May 26-June 25, 1944
(Does Not Include Probables or Damaged Totals)

	Europe		Italy		Southwest Pacific		Russia*
	Enemy	Allied	Enemy	Allied	Enemy	Allied	Enemy
May 26	....	2	26	23	....	....	30
May 27	148	105	7	19	....	....	14
May 28	1	1	4	3	....	1	33
May 29	101	46	68	34	9	....	16
May 30	68	21	15	8	5	....	142
May 31	5	13	43	23	9	4	110
June 1	13	17	....	4	....	....	47
June 2	7	17	2	6	1	3	37
June 3	....	1	1	6	2	1	53
June 4	1	7	2	11	7	1	39
June 5	....	8	4	13	34	1	48
June 6†			34	35	19	1	54
June 7	176	289	....	3	2	1	22
June 8			4	6	1	1	27
June 9	6	8	34	23	....	....	14
June 10	44	52	27	28	9	5	15
June 11	16	47	19	17	12	....	20
June 12	28	65	....	4	3	1	12
June 13	3	....	37	33	28	2	13
June 14	39	43	15	18	6	....	12
June 15	47	29	7	18	29	....	18
June 16	5	36	70	21	11	....	18
June 17	10	....	....	3	1	....	24
June 18	2	1	1	....	51	1	36
June 19	....	43	2	....	2	4	38
June 20	18	7	....	....	12	3	24
June 21	5	2	....	....	1	1	73
June 22	13	26	2	10	....	....	44
June 23	26	24	31	18	....	1	54
June 24	55	44	27	15	....	1	48
June 25	11	9	3	6	....	1	29
TOTALS	848	963	485	408	254	34	1164
Totals Since Jan. 1	4760‡	4121‡	2418	1391	1608	243	6886

*RUSSIA: Does not reveal own losses.

†Supreme Headquarters of the Allied Expeditionary Forces failed to tabulate in its communiques the day-by-day score of air losses. Instead, it issued a statement that from dawn on June 6 through noon on June 8 a total of 176 enemy planes and 289 Allied planes had been destroyed. These figures may be revised if and when a more detailed analysis is issued by SHAEF.

‡EUROPE: Six enemy and one Allied plane have only now been reported destroyed during the month of April in the Arctic Circle.

OTHER AREAS FOR MAY 26-JUNE 25

CHINA: Sixty-nine enemy planes destroyed at loss of twenty-four. Totals since January 1, 232 enemy, 61 Allied.

PACIFIC: Seven hundred sixty-two enemy planes destroyed at loss of one hundred fifty-six. Totals since January 1, 1,442 enemy, 219 Allied.

SOUTHEAST ASIA: Sixteen enemy planes destroyed at loss of twenty-one. Totals since January 1, 347 enemy, 142 Allied.

MIDDLE EAST: Eight enemy planes destroyed at loss of seventeen. Totals since January 1, 52 enemy, 63 Allied.

(NOTE: These figures are compiled by SOUTHERN FLIGHT from daily headquarters communiques issued by the respective commands. They are therefore subject to periodic adjustment. Dates for Southwest Pacific are those on which figures are released; others when action occurred.)

The WORLD'S WINGS

By LUCIEN ZACHAROFF

NEW NAZI PLANES

The Luftwaffe—an air force without a future and with a hell of a present—still occasionally erupts with new aircraft types. These can neither be produced in adequate numbers nor manned by properly trained personnel for the do-or-die defense of the **Vaterland.** However, some of the types which have emerged during this fateful year are of interest. A condensed survey of a few is offered herewith.

Ironically, the Nazis on the defensive are finding useless the best that they have developed for offensive warfare. Consider the He-177, a huge, long-range, over-water bomber and reconnaissance machine. Fitted with two DB-610 engines, each with an output of 2,700 hp. at 18,700 ft., each composed of two coupled DB-605 12-cylinder inverted-vee in-line liquid-cooled engines of the type employed on the Me-109G, this formidable specimen —top speed about 300 mph—has no place to go these days.

At the dawn of its career, the He-177 roamed over the British countryside, the Mediterranean, the Bay of Biscay. It carried its bomb load internally. It toted 20-mm. cannon in the tail mounting, as well as a number of smaller-caliber guns in dorsal, lateral, and ventral spots. Them was the days!

★ ★ ★

Derived from this heavy bomber is the He-274, a four-engined transport optimistically slated for transatlantic service. Orders have been placed with the Ernst Heinkel Works in the north of France. The prototype was to be flown in August, 1944. A slight hitch seems to be due to the Allied invasion of France.

It was originally intended to arrange the He-274's four 2,000-hp. BMW-802 18-cylinder twin-row radials individually in the wing leading edge, each powerplant driving a propeller. The latest design groups them in pairs, resembling the He-177 arrangement and driving contra-rotating props. This drive is effected by twin gears developed by the **S. N. C. A. du Centre;** it was initially designed for use in the Hispano-Suiza 12Y liquid-cooled engine.

★ ★ ★

Four variations of the six-engined Messerschmitt Me-323 were known as early as last winter. Some are flying with three-blade variable-pitch propellers, others with two-blade propellers of the wide-chord paddle-blade kind. These types have been subdivided into armed and unarmed transports. The latter are probably confined to freight and passenger service within the Reich and satellite countries.

The Me-323 span has been given as 55 meters and internal capacity as 100 cubic meters. The maximum number of troops this model can carry is 130. Other cargoes have included fuel, oil, stores, water, heavy and light artillery, trucks, tractors, stretcher patients, horses, motorcycles, light caterpillar-track vehicles.

★ ★ ★

Speaking of six engines, the BV-222 Viking flying boat has them too. Two versions are in production, one powered with BMW-323, 985 hp. air-cooled radials with two-speed superchargers and direct fuel injection, the other with Junkers-207 diesels.

The BV-222 armament consists of "numerous cannons and machine guns". Its span is 151 ft., length 121 ft. 4 in., height 18 ft. 4 in. The wings have a wide center section, outer panels tapering slightly to broad somewhat rounded tips. There are a single fin and a rudder with a broad rounded apex. The tailplane, which tapers mostly on the leading edge and has small square tips, is mounted a short distance up the fin.

A spacious cockpit, navigator's bridge, and engine control room are in the upper part of the hull. The lower deck accommodates 100 fully armed men or a similar weight of freight.

★ ★ ★

Another new type is the twin-engined Arado Ar-240, a reconnaissance fighter-bomber with a short nose, long engine nacelles, and a characteristic finning at the end of the fuselage. Then there is the Siebel Si-204, a transport and advanced trainer, on which production fell so far behind that the Nazis had to farm it out to uncertain French industrial plants.

Other aircraft types have shown up. None has proven to be the secret weapon for saving the day at the eleventh hour. "Too little and too late" is an up-to-the-minute epitaph for the Luftwaffe.

operating), and AAF confidence has been strengthened by tremendous successes in Europe.

Allied Blitz in Making

The European invasion, as had been expected, was keyed to air power. More than 11,000 Allied airplanes operated over France on June 6 when the first landings were effected. One thousand air transports, many towing glider trains, effectively landed over 200,000 U. S. and British air borne troops behind the lines. Fighter-bombers, attack bombers, medium bombers and heavies supported the land armies by strafing and bombing enemy personnel, materiel and communications at, near and beyond the lines, while strategic air units continued operating inside Germany. Communiques did not clearly trace the day-to-day attrition against the German Air Force, but from dawn on June 6 until noon on June 8—in a 53½-hour period—a total of 176 enemy airplanes had been shot down at a loss of 289 Allied planes. The ratio was as expected, but the amount of losses was far below anticipation.

The German Air Force did not oppose the invasion's early stages except for fitful showings. Allied air domination on D Day was 200 to 1—in other words, only about 60 German planes attacked that day, and over 90 per cent of them were shot down. At best Goering could have put up only about 1,500 against the Allied fleets of thousands, and finis would have been written then and there to 35 to 50 per cent of the Luftwaffe's effective strength. Lt. Gen. Barney Giles, deputy commander of the U. S. Army Air Forces, commented: "If the Germans could have had our Air Force for only one day and had used it against the invasion, there could have been no landings. Eight thousand bombers and fighters employed against the landings would have stopped the invasion."

General Giles didn't say so, but he knew Germany didn't possess even one-fourth that number to use against the invasion. He knew, as General Arnold and his entire staff knew, that strategic air power, as chronicled in these columns, had destroyed the Luftwaffe's means effectively to resist months before the invasion—that what little German air strength remained would be hoarded to play against possible landings elsewhere from Norway to Greece, that such German strategy would end up in battlefield aviation tactics in which the Lutfwaffe's remnants would be ground to wreckage just as effectively as if it had been committed on D Day. That will be the inevitable pattern, for with such air domination the Allied armies can not do less than stage a ground blitz with speed and force surpassing the 1940 version mounted by Germany in the Low Countries and France before Dunkirk.

★ ★ ★

Buy War Bonds – to Have and to Hold

Hurricane in Harness

Poised on knife-edged supports, the ten-foot scale model of a Boeing Flying Fortress rides the screaming gale. Engineers, tense at their control panels, watch and check every reaction of the sturdy airplane. In an hour they can learn more about the flight characteristics of a new wing or a new tail design than would be revealed in months of actual flying.

The Boeing wind tunnel, in the recently dedicated Edmund T. Allen Memorial Aeronautical Laboratories at Seattle, is capable of speeds in the 700-mile-an-hour range, approximating the speed of sound—four or five times faster than a Gulf hurricane or a typhoon.

A gigantic 16-bladed fan, 24 feet in diameter, funnels the air into the "throat" of the test section. Power from a rated 18,000-horsepower synchronous electric motor is transmitted to the fan through the largest magnetic clutch ever built.

But speed is only one of the features that make this huge structure an exceptional contribution to the advancement of aeronautical science.

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• • •

The Boeing wind tunnel is now ready to help speed the day of Victory. When the war is won, it will mean much to increased comfort, speed, safety and economy in air transportation. As in the past, Boeing leadership in design, engineering and manufacturing will set the pace in aeronautical development of peacetime aircraft products.

DESIGNERS OF THE FLYING FORTRESS • THE NEW B-29 SUPERFORTRESS • THE STRATOLINER • TRANSOCEAN CLIPPERS **BOEING**

Materiel Command Creates Division to Handle Terminations

A "Readjustment Division" to handle all Army Air Forces contract termination matters within the Materiel Command has been announced by Maj. Gen. B. E. Meyers, commanding general. Col. E. V. Rawlings, chief of the new Division, said its primary aim is to "establish machinery for the effective handling of contract terminations, cutbacks, and disposal problems which will arise as a result in the AAF's tactical requirements." The new Division has absorbed all termination duties, including settlement of claims arising out of terminations, performed in the past by the Procurement and Production Divisions of the Command, which handles all AAF aircraft production matters.

June Plane Output Drops to 8,049 But B-29 Work Expands

During June production of military aircraft slumped to 8,049 airplanes, which was 853 less than produced in May, but the uptrend in heavy bomber output continued with one B-29 plant exceeding its schedule and other B-29 plants nearing their schedules.

WPB Executive Vice Chairman Charles E. Wilson, who issued the figures, said aircraft poundage approximated 100,000,000 for June, being 1,500,000 pounds short of May's record.

The industry was still affected by a transition from smaller to heavier planes, and production figures were also influenced by the failure of three unnamed companies to meet delivery schedules on smaller planes because of "difficulties with certain parts." Wilson emphasized that the lag was only temporary, declaring "the decline is not alarming and would be dangerous only if it continued, which it won't." Manpower shortages did not cause the slump, he said.

Vincent Bendix Founds New 'Copter Firm to Build Three New Models

Formation of Bendix Helicopter, Inc., by Vincent Bendix, who resigned two years ago as chief executive of the Bendix Aviation Corp., was announced in New York last month when the new firm revealed plans for three new types of the rotary wing craft: (1) a two-passenger model with a cruising speed of 100 mph., (2) a ten-passenger model rated at 600 hp., and (3) a 1,200 hp. helicopter bus carrying twenty passengers.

The new firm, successor to Helicopters, Inc., which Bendix started in 1943 to develop original principles of his own invention, is not affiliated with Bendix Aviation Corp. Bendix is president, and other officers and associates are Claire L. Barnes, founder of Houdaille-Hershey Corp., and Martin Jensen, vice president; James W. Garside, president of Langley Aviation Corp., treasurer; Charles L. MacDonald, attorney, secretary; Frederick K. Barbour, president of Linen Thread Co.; John A. Clements, public relations counsel; Hector J. Dowd, president of Certain-Teed Products Corp.; Laurence D. Ely president of Reeves Sound Laboratories, Inc.; Lloyd Maxwell, first vice president of Roche, Williams & Cleary, Inc.; Robert J. Newhouse, president of Newhouse & Sayre; and Edmund W. Ross, president of C. P. A. Company.

East Coast Aircraft Companies Hire 15,000 Veterans of World War II; Experiences Cited

Approximately 15,000 veterans of World War II have already been hired or rehired by member companies of the East Coast Aircraft War Production Council, and veterans, on the whole have adjusted "very well and are doing productive jobs," according to a report issued by the Council on June 25.

Each of the companies has taken special steps, including job training, for handling veteran employment. There are still many problems to be solved. For example, changing production requirements, which may retard employment or cut the employment level, will affect job availability for veterans. Also it is clear to the companies that the veteran who needs a job must be able to perform the duties involved. Physical handicaps require special treatment, and psychiatric difficulties require special attention.

How the seven member companies are handling the matter is shown in the following excerpts from the report:

BELL: All personnel employes oriented in ways and means of assisting veterans to adjust themselves to jobs. A small staff on a full time basis does veteran reemployment work, and the firm conducts a job survey to classify jobs according to abilities and disabilities.

CHANCE-VOUGHT: Practically 100 per cent of all veterans applying have been employed, about four out of five doing shop work.

CURTISS-WRIGHT: By early summer, the Airplane Division had hired 400 ex-service men in its four plants, 25 per cent being former employes. Readjustment to home-front conditions is eased as much as possible. For this purpose, one carefully chosen member of the personnel department in each plant has been given responsibility for the employment and general welfare of veterans.

EASTERN AIRCRAFT GENERAL MOTORS: Developed system of classifying jobs for veterans according to physical standards, making possible rapid check-off of applicants against available jobs. Company makes unusual statement that returned veterans are generally in "better shape physically than ordinary civilian applicants," and another that "veterans seem less likely to leave their jobs than civilians"—7 per cent turnover among civilian workers compares with 6 per cent for veterans.

FAIRCHILD: Ranger Aircraft Engines Division feels employment of veterans of World War II has had a beneficial effect on morale of working force, and has addressed communications to veterans' hospitals and veterans' organizations, as well as to Selective Service, requesting it be advised of veterans available for employment. No undue emphasis is placed on interviews and physical examinations of veterans.

GLENN L. MARTIN: When a veteran applies, he is given the usual physical exam and assigned to a job for which he is found suited. The Personnel Department has a special staff assigned to veterans to see their special problems handled properly.

REPUBLIC: Over 700 veterans employed to date, many coming through Red Cross, Selective Service, Veterans' Administration and Army and Navy Relief Societies. Some found readjustment difficult, but transfers and special attention in many cases solved the problem. A number of ex-pilots are employed on the flight operations staff.

Wilson Says No More Cutbacks for 1944; B-24 Rumor Denied

"The only cutbacks in aircraft contemplated for 1944 already have been announced—those at Brewster, Douglas and Bell." So stated Charles E. Wilson, WPB Executive Vice Chairman last month. At the same time he denied reports from Willow Run that Douglas at Tulsa, North American at Dallas and Consolidated Vultee at Fort Worth will replace B-24 production with B-29 work, and explained that the Tulsa plant eventually will make Douglas light bombers instead of B-24's, that North American will continue indefinitely making B-24's at Dallas and that Fort Worth's B-24 program will eventually give way to the production of heavy bombers of Consolidated Vultee design.

The Douglas cutback at Santa Monica calls for A-20 output to be reduced gradually until September, when C-54 production will be greatly increased there. Bell's Buffalo plant is narrowing P-63 (Kingcobra) production to "satisfy present needs."

Navy Cancels Contract for Budd Conestogas

Latest cutback along the aircraft production front struck the E. G. Budd Manufacturing Company of Philadelphia last month when the Navy cancelled its contract for approximately 775 stainless steel, twin-engined Conestoga cargo planes, leaving Budd only twenty-five of the original order of 800. Previously the Army cancelled its order for 600 Conestogas.

Harding Directs Surplus Aviation Disposition

Lt. Col. William B. Harding has been named director of the Surplus War Property Administration's Aviation Division. Harding formerly was vice president of Defense Supplies Corporation and directed the program of eliminating Axis control of Latin American airlines. He was a member of the Interdepartmental Cargo Plane Committee of the WPB, director of the Division of Transportation and Aviation of the Office of Coordinator of Inter-American Affairs, and since entering the Army has been attached to Washington headquarters of the Air Transport Command.

$13,171,889,000 in Aircraft Contracts for South, Mid-America

Sixteen states in the South and Mid-America received U. S. contracts for aircraft manufacture totalling $13,171,889,000 during the period June, 1940, through April, 1944, according to a War Production Board summary released recently.

Distribution of aircraft contracts by states includes the following:

Alabama $37,337,000, Florida $3,093,000, Georgia $417,982,000, Illinois $2,622,926,000, Kansas $2,471,351,000, Kentucky $336,192,000, Louisiana $147,388,000, Mississippi $5,619,000, Missouri $542,716,000, Maryland $1,945,210,000, Nebraska $528,938,000, North Carolina $49,989,000, Oklahoma $1,342,742,000, Tennessee $690,211,000, Texas $2,028,570,000 and Virginia $3,625,000; total for sixteen states, $13,171,889,000.

Republic Gets Large Order for Fighters

Additional contracts totalling $154,639,000 for P-47 Thunderbolt fighter-bombers have been received by Republic Aviation Corp. They bring Republic's unfilled orders for P-47's to over $583,000,000. The company says it is now rated as the world's largest producer of fighter planes.

Nash Tops 100,000 Props

More than 100,000 Hamilton Standard three-blade propellers have been manufactured on a mass production basis by the Nash-Kelvinator Corporation. These propellers are used to supply twenty-five different Allied combat aircraft.

Recently the company announced contracts calling for the production of four-blade propellers and the new R-2800-C Pratt & Whitney two-stage supercharged engines.

Kansas Firm Lists Surplus Aircraft Materials

Acting as a brokerage for companies with excess inventories due to modification or other changes of product, the new firm of Material Distributors, Inc., of Wichita, is now listing over 300 war contractors as a source of supply. Primarily formed to clear surplus stocks for Beech Aircraft Corp., the new company proved so successful they incorporated as a brokerage for other firms needing this type of service. Through Material Distributors war contractors can find materials which are often scarce in the open market and manufacturers can sell their excess inventories.

L. W. Noble, originator of the idea and president-general manager of the new firm, said their purpose was: "aiding contractors to meet their critical shortages or normal production needs from the existing surplus of other contractors." Noble is conservation director of Beech Aircraft.

Aircraft Cutbacks to Free Automotive Lines

The War Production Board has under advisement the possibility of building some light commercial trucks in 1945, if the effect of the aircraft cutbacks on the automotive industry will permit it without interfering with the production of medium and heavy trucks.

The Piston Ring Manufacturers Industry Committee is considering the status of casting and machine capacity for automotive type pistons, in the light of cutbacks in the aircraft program.

Aviation Mart Opens For Surplus Sales

The sale of surplus materials and equipment no longer needed by the aviation industry, because of design and specification changes, will be the first objective of the newly opened American Aviation Mart in Chicago at 666 Lake Shore Drive.

The first company to lease space in the Aviation Mart was the Curtiss-Wright Corporation. Samples from the different items to be sold will be kept on display at the Mart, and will be shipped to warehouses elsewhere. All sales will be subject to approval by government agencies such as the War Production Board, as well as the Army and the Navy.

Aeroprops for P-63

Aeroproducts Division of General Motors has announced that its production during the remainder of 1944 will be devoted to three, four and six-bladed propellers, the latter of dual rotation design. It recently delivered its 10,000th hollow-steel propeller, and revealed its four-bladed Aeroprop is being installed on all of the new Bell P-63 fighters and that it had received a new contract to supply four-bladed, automatic, constant-speed propellers for the P-51 Mustang.

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PERSONALS

STEADHAM ACKER, known for his direction of Birmingham's National Air Carnivals, has been appointed aviation consultant by the City of Oklahoma City to direct its intensive aviation development program. "Steady", who has a host of friends in all phases of aviation, organized and commanded the Navy's first night flying division at Pensacola, Fla., during World War I, served as chief judge of Miami's All-American Air Maneuvers, was national airport chairman for the old Aeronautical Chamber of Commerce for three years, has managed Birmingham's Municipal Airport and has directed the Birmingham Air Carnival for ten years. . . . MAJ. GEN. D. E. MEYERS has become commanding general of the AAF Materiel Command with headquarters at Wright Field, succeeding MAJ. GEN. CHARLES BRANSHAW, temporarily relieved because of ill health.

AL S. KOCH, formerly director of safety regulation service of the Civil Aeronautics Administration, has resumed inactive military status and become consultant to the CAA Administrator. . . . ALFREDO DE LOS RIOS, founder of the Inter-American Escadrille and native of Chile, has become assistant to the director of foreign relations of the Fairchild Engine and Airplane Corp., and will be active in foreign sales. . . . JOHN HOWARD PAYNE has established his own office in Washington as a consultant economist after serving as economic development manager of the Aeronautical Chamber of Commerce.

JOHN C. LEE has become acting general manager of the Aeronautical Chamber of Commerce after resigning as general manager of the Aircraft War Production Council, Inc., on the West Coast. . . . MYRON B. GORDON has resigned as vice president and general manager of Wright Aeronautical Corporation and his successor is G. M. WILLIAMS, senior vice president of Curtiss-Wright Corporation. . . . PAUL E. FRANTZ is the new operations manager of Adel Precision Products Corp. He formerly was with Lucien I. Yeomans, Inc., of Chicago. . . . GUS LEAZAR, formerly of the Safety Bureau of the Civil Aeronautics Board, has been elected a director and vice president of Southeastern Air Service, Inc., and will devote full time to the firm's fixed base and feeder airline operations.

FLOYD O. JOHNSON, formerly sales manager of Stinson Company, has been appointed a full partner of Aviation Associates, Inc., of Chicago, in charge of sales training for aircraft manufacturers and associated industries. . . . J. EARL STEINHAUER, assistant manager of Washington National Airport, has left government service to join the Fairchild Engine and Airplane Corp., at Hagerstown, Md. . . . JOHN W. FRIEDLANDER is the new president of Aeronca Aircraft Corp., succeeding his brother, CARL, who became vice president. . . . REID BOGERT is project engineer on the building of Douglas Aircraft's new BTD bomber torpedo plane for the Navy at El Segundo.

GENE SCROGGIE, nationally known authority on air pick-up, has been appointed operations director of Ryan Airlines, an extensively projected undertaking of Ryan School of Aeronautics.

J. NELSON KELLY, veteran pilot and airport manager, has been appointed executive vice president of the Fibre Lock-Nut Corporation by Col. N. Jay Boots, president.

Curtiss Survey Expects Only 158 Planes on U. S. World Routes in '50

A very complete and conservative report dealing with postwar domestic and international passenger, mail, and cargo traffic potentials has been published by Curtiss-Wright's Airplane Division.

Containing many charts, graphs, and figures and with amply explained basis for estimates, many conclusions are drawn. Among them: 158 planes of all sizes will handle the 1950 volume of U. S. international traffic; domestic air cargo rates will be 35 to 50 cents per ton-mile in first year after war and may drop to 25 cents by 1950; domestic passenger rates of 3½ cents per mile by 1950, and doubling of domestic air routes by the same year. In most cases a 30 per cent air-generated boom in business has been predicted.

Economies of Produce Shipping by Air Studied

Selected vine-ripened tomatoes at two cents a pound above normal charges in Detroit, and vine-ripened strawberries at a nickel a quart premium flown to the North from Texas and Miami in the winter are predictions of Dr. R. W. Hoecker of the Marketing and Research Division of the U. S. Department of Agriculture.

In a survey sponsored by Col. Edward S. Evans, the facts and figures are based upon DC-3 operation gross loaded to 28,000 lbs. for exclusive cargo service. Ton-mile costs for such an operation would vary between nine and eleven cents.

Copies of this report on "The Postwar Possibilities of Air Transportation of Fresh Strawberries and Tomatoes" are available from Evans Products Company, Detroit, Mich.

Feeders Adopt Policies, Elect Officers, Directors

The newly-formed Feeder Airlines Association, at a meeting last month in Washington, D. C., pledged its efforts to the encouragement of comprehensive feeder network as integral part of the U. S. transport system offering maximum air service to maximum number of people, and encouragement of civil aviation advancement in the interest of national defense as well as public interest.

Elected as officers were Harry R. Stringer, All American Aviation, Inc., president; William R. Kent, Southair, Inc., vice president; Joseph J. Mitchener, Jr., Hawthorne Airways, treasurer; Bowman R. Otto, Otto Aviation Corp., secretary. Directors are Nick Bez, West Coast Airlines; Les Bowman, Consolidated Airlines, Inc.; Mrs. Richard C. du Pont, All American Aviation, Inc.; Col. Herbert C. Fox, Southern Aviation Corp.; Ray Hylan, Hylan Flying Service; E. Cody Laird, Southeastern Air Express, Inc.; James G. Ray, Southwest Airways Co.; Eugene R. Scroggie, Ryan School of Aeronautics; Phillip C. Wagner, Parks Air College; Harry S. White, Coast Aviation Corp.; Louis P. Wulf, Jr., Automatic Air Mail, Inc.

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Interchangeable Control Parts Speed Repairs

Lay-ups for repairs of combat planes have been sharply reduced because of aircraft control mechanisms that are so built that they are completely interchangeable on the battle front, according to Richard M. Mock, vice president of Lear, Inc., before a meeting of the Society of Automotive Engineers at Dayton, Ohio, last month.

Mr. Mock said that standardization of the component parts of the aircraft actuators permits a great many variations in the basic control device for different aircraft. He added that no additional tooling or special work is demanded with the standardization. Nearly all planes are equipped with electro-mechanical controls.

Convair Moves Into Fort Worth Addition

Approximately 95 per cent of the clear span addition to the experimental building at the Fort Worth division of Consolidated Vultee Corporation has been completed, and is being occupied. Cost of construction of the addition, which is sixty feet high, housing the nation's largest aircraft scales, was $1,225,000.

Texokana Supply Centers in Dallas

The Texokana Supply Company has established main offices in Dallas as the most convenient location from which to contact the aviation industry in Oklahoma, Arkansas, Kansas and Texas. P. C. Lindman, president, said the new company represents leading manufacturers of aircraft hardware; bolts, screws, structural rolled sections, turn buckles and Aero-Seal hose clamps. Lindman was formerly sales manager for Aero-Seal, in Rockford, Illinois.

Sponson Fuel Tanks Increase Range 60%

Increased range of the PBM-3 Mariner by 60 per cent is accomplished by the development of a new droppable sponson fuel tank. It is adaptable to all types of flying boats.

This new Martin device enables a longer range and greater loads than ever before possible, and still get off of the water. Attached externally near the main step, it adds to the planing area.

New Simmonds Booklet

A booket issued by Simmonds Aerocessories, Inc., illustrates the development of a group of advanced aircraft products such as the automatic engine control, the precision push-pull control, hydraulic fuse and the chronometric radiosonde. New postwar products are being developed in the automotive accessories and household appliance fields. The company operates plants in California, Vermont and New York and customer service offices in Canada and the mid-West.

Luscombe Stock Returned

Seventy-four thousand shares of capital stock of the Luscombe Airplane Corporation, worth about $600,000, have been returned to Leopold H. P. Klotz, of Trenton and New York City by the U. S. Alien Property Custodian. Control of the property was taken in April, 1942. The case was reopened after Klotz filed a claim, and it was found that he was a citizen of Liechtenstein and a resident of the United States in 1939. It was also found that funds were owned by him individually, and the funds were not owned by or held on behalf of any enemy.

Convair Engineers Meet

Industrial engineers from ten manufacturing divisions and Consairway met last month at Consolidated Vultee's division in Ft. Worth. Talks were made by Chief Engineer R. B. Parkhurst of San Diego, and his assistants, J. D. Towne and C. R. Dockstader. Chief industrial engineers who appeared on the program and their locations are Comdr. R. G. Mayer, Fort Worth; D. J. Clow, Fort Worth; J. M. Druliner, San Diego; J. Considine, Louisville; N. F. Metcalf, Allentown, Pa.; C. E. White, New Orleans; R. C. Rollins, Elizabeth City, N. C.; B. A. Erickson, Tucson; E. E. Hartzler, Miami; R. R. Dietrich, Wayne, Mich.; and J. R. Enright, Consairways Fairfield, Calif.

Use of Off-Tolerance Items

In order to speed up the somewhat cumbersome system for handling of slightly off-tolerance items, the Air Forces' Materiel Command has announced a "Materials Review Limits" system to speed acceptance and use of parts and supplies that do not meet tolerance limits, but are serviceable and do not adversely affect safety, performance, durability, weight, or interchangeability. These limits will be in published form for each kind of article, and judgment of certain contractor's inspectors within these limits will be accepted.

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CAA Will Direct Aviation Gas Rationing

At the request of the OPA, the Civil Aeronautics Administration has agreed to assume responsibility for rationing aviation gasoline intended for civilian use. Plans are now being formulated and methods for allotment are being studied. The CAA promises an accurate check of all gasoline used to prevent its diversion for purposes other than aviation and to eliminate the use of gasoline in non-essential flying activities. No date has been set for placing the machinery in motion.

Arnold Ends WASP Recruiting, Training

As a result of the defeat in the House on June 21 of the Costello Bill to expand the Women's Air Service Pilot training program, Gen. H. H. Arnold on June 26 announced immediate termination of all recruiting and training of additional WASP's and said training of WASP's now at Sweetwater, Texas, will end when the current courses are completed. There are now 721 WASP's, he added, and the total will be swelled to 1,019 by December when the present training is completed. Their operations for the AAF will be continued "for the present," Gen. Arnold said.

Prior to the House vote, the Army Air Forces Training Command in Fort Worth had announced a broad new program to screen non-military civilian male pilot talent for possible utilization by the AAF. The threefold goal of the program is to reclaim for AAF uses (1) instructors whose AAF employment ended with reduction of civilian contract flying schools and also instructors freed by termination of the CAA-WTS project, (2) former civilian contract instructors who have been inducted or called to active duty in non-flying AAF capacities, and (3) former civilian contract and CAA-WTS instructors called to active duty or inducted in branches other than the AAF within the U. S. Ten screening boards began immediately giving personal interviews and flight checks to the civilians. Official letters which went to over 10,000 airmen were answered by 6,000 within a few weeks, and replies by the hundreds were being received daily from instructors desiring to go into uniform as AAF students in aviation cadet, glider, air transport, gunnery and technical training schools.

Southwest Asks 39 Additional Feeder Routes

In an amended application before the Civil Aeronautics Board Southwest Airways expanded its plans for feeder line service by adding thirty-nine routes in Texas and Oklahoma. A total of 317 cities and towns are involved in the application.

Eleven routes would originate in the Dallas-Fort Worth area, seven out of Houston, six from Oklahoma City, five from San Antonio, two each from Amarillo and Tulsa, and one from Corpus Christi. Five shorter routes would connect one or more of the main routes.

A ten- to twelve-passenger twin-engined plane has been designed for the operation. Aerial pick-up would be rendered at points without landing facilities. Passenger rates would average five cents a mile.

Figuring that several million dollars would be required to finance the operations, the operator said such financing plus a personnel of 2,000 persons including 400 pilots is already available to Southwest Airways.

Col. T. L. Thurlow Killed

Col. Thomas L. Thurlow, one of the world's leading authorities on navigation and chief of the Instrument and Navigation Branch of the Equipment Laboratory of the AAF Materiel Command, was killed in the crash of an Army twin-engined transport at Dallas June 18. The thirty-six-year-old expert, navigator on Howard Hughes' round-the-world flight in 1938, developed many navigational devices and aids which are enabling U. S. pilots to fly quickly and safely to remote areas of the world. He wrote the Air Corps manual on celestial navigation and influenced the Air Almanac which recently replaced it. At Wright Field the Army stated Col. Thurlow had "brought navigation out of the Dark Ages and pushed it ahead 600 years."

Three Hundred from Fourteen States Attend Airport Conference

The first annual short course and conference on Airport Management and Planning, sponsored jointly by the A. & M. College of Texas and the Civil Aeronautics Administration Fourth Region, was held June 14, 15 and 16 on the Texas A. M. College Campus at College Station. Howard W. Barlow, A. & M. Dean of Engineering, and S. E. Travis, CAA Supervisor of Airports, Fourth Region, were co-chairmen of the eyent. Over 300 people from fourteen states attended, reflecting the national scope of the conference as well as the growing interest in airport development.

Chairmen of the seven general sessions were: J. Kirk Baldwin, CAA, Washington; Douglas O. Langstaff, Director of Aviation, City of New Orleans; C. F. Aurand, City Manager, Oklahoma City; L. A. Henry, Director of State Planning, Little Rock, Arkansas; C. L. Willis, Jr., CAA, Fort Worth; W. W. Morgan, Braniff Airways, Oklahoma City; and Howard Barlow, A. & M. College. Subject matter of the papers delivered by their authors covered the entire realm of current airport problems from those of management and finance, to expansion, technical requirements and maintenance. They will be covered at length in the August issue of SOUTHERN FLIGHT.

CAB Lists 60,000 Miles of New "Desirable" International Routes for U. S. Air Carriers

Tentative plans for a 75 per cent expansion of U. S. commercial air operations in the international field after the war were revealed last month by the Civil Aeronautics Board when Chairman L. Welch Pogue listed new foreign routes which the CAB "has tentatively concluded would be desirable for post-war operation by United States air carriers."

Pogue traced about 60,000 miles of new routes which, if added to the 80,000 miles of foreign routes now operated, would bring the U. S. services to a total of 140,000 miles. Simultaneously he said applications for authority to operate international services will be brought to hearing and final decision "as speedily as circumstances of the war permit," stressing the point that the Board, unable to wait longer for clarification of national policy regarding foreign air services, will have to proceed under present law if it is to be ready with approved air routes when peace arrives.

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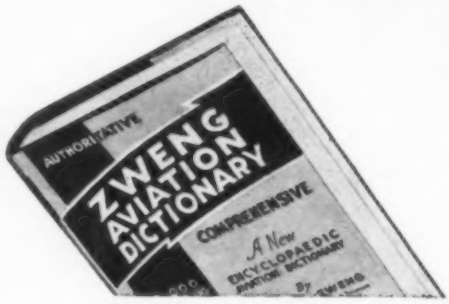

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tions have been made to the Board, but the CAB emphasized it prepared its tentative route plans with no idea of designating any particular carrier to operate any particular route. Observers saw in the action evidence of impending quick and decisive action by the Board to clear the way for the long-expected upsurge in carrier expansion.

Routes Listed

In listing the following tentatively proposed routes, the Board said it omitted services from the U. S. and Alaska terminating in contiguous countries of Canada and Mexico; nor did it include a description of the services furthering the war effort under temporary certificates:

I. New York—a point in Newfoundland or Labrador — a point in Eire — London — Berlin — Prague — Vienna — Istanbul — Cairo.

II. New York—a point in Newfoundland or Labrador — a point in Eire — Paris — a point in Switzerland — Rome — Athens — Cairo — Basra — Karachi — Calcutta.

III. New York — points in Newfoundland or Labrador, Greenland and Iceland — Oslo — Stockholm — Helsinki — Leningrad — Moscow — Teheran — Basra.

IV. New York — Bermuda — Azores — Lisbon: (a) Lisbon — Madrid — Marseilles—Rome, (b) Lisbon—Algiers—Tunis — Tripoli — Cairo, (c) Lisbon — London.

V. New York — San Juan — Trinidad — Paramaribo — Belem — Natal: (a) Natal — Dakar — Casablanca — Tangier — Madrid — Paris, (b) Natal — Dakar — Monrovia — Lagos or Accra — Brazzaville — Johannesburg — Capetown. As alternate on express trips, the route would be via Natal — Ascencion Island — Lagos — Accra, or Pointe Noire.

VI. San Francisco — Los Angeles — Honolulu — Canton Island — Suva — Noumea: (a) Noumea — Auckland, (b) Noumea — Sydney.

VII. San Francisco — Honolulu — Midway — Wake: (1) Wake — Tokyo — Shanghai, (2) Wake — Guam — Manila: (a) Manila — Macao — HongKong (or Canton), (b) Manila — Tarakan Singapore — Batavia.

VIII. Chicago — St. Paul-Minneapolis — Alaska and Seattle — Alaska: (a) Alaska — one or more intermediate points in Siberia — Vladivostok — Mukden — Shanghai — HongKong (or Canton) — Hanoi — Calcutta, (b) A leg from Mukden to Peiping and Chungking, (c) Alaska — Unalaska — Kiska — Paramushiru — Tokyo — Shanghai — HongKong (or Canton).

IX. Miami — San Juan — Trinidad — Belem: (1) Belem — Fortaleza — Natal — Recife — Victoria — Rio de Janeiro, (2) Belem — Barreiras — Rio de Janeiro: (a) Rio de Janeiro — Porto Alegre — Montevideo — Buenos Aires, (b) Rio de Janeiro — Sao Paulo — Asuncion — Buenos Aires.

X. Miami — Havana — Merida.

XI. Miami — Cienfuegos — Kingston: (a) Kingston — Cristobal, (b) Kingston — Barranquilla.

XII. Miami — Nassau.

XIII. New Orleans — Merida — Guatemala City.

XIV. Brownsville — Mexico City — Guatemala City — San Salvador — Tegucigalpa — Managua — San Jose — Balboa — Cristobal: (a), Cristobal — Barranquilla La Guaira — Trinidad, (b) Cristobal — Medellin.

XV. Cristobal — Cali — Guayaquil — Lima — Arica: (a) Arica — La Paz — Buenos Aires, (b) Arica — Santiago — Buenos Aires, (c) Arica — Antofagasta — Salta — Buenos Aires, and certain connecting services.

XVI. New York — a point in southeastern United States — Ciudad Trujillo or Port-au-Prince — Caracas — Manaos: (a) Manaos — Goiania — Bello Horizonte — Rio de Janeiro, (b) Manaos — Cuyaba — Corumba — Asuncion — Buenos Aires — Montevideo.

XVII. New Orleans — Havana — Santiago — Port-au-Prince — Ciudad Trujillo — San Juan.

XVIII. Tampa — Havana.

XIX. Balboa — Cali — Iquitos — La Paz — Buenos Aires.

XX. New York — Charleston — Nassau — a point or points in Cuba — Kingston — Balboa (or Cristobal).

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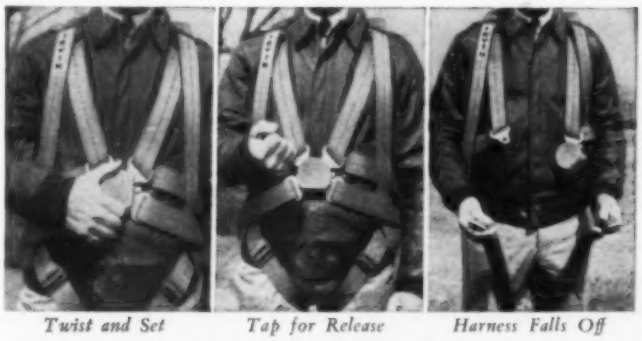

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Eighteen Wing Commanders Named Directors in League; Attitude of CAP Membership Aired at Meeting

Steps were taken June 26-27 at a meeting of all CAP Wing Commanders in New York to settle differences which lately had caused resistance against the Civil Air Patrol League. With officers of the League in approval, these points were decided: (1) Strong representation of CAP Wing Commanders, selected by vote of Wing Commanders in each region, on the League's board of directors and executive committee; (2) provision for state boards, and (3) revisions in the League's policies to emphasize that the primary aim of the League is to help the CAP Cadet Program.

One-third of the CAPL board of directors is to be composed of CAP Wing Commanders, the ratio being eighteen CAP Commanders among this year's fifty-four CAPL directors and, next year, when the directorate will be reduced by half, nine CAP Commanders among twenty-seven directors. Wing Commanders nominated for this year's board (two from each of nine Army Service Command areas) are I. Lt. Col. Guy P. Gannett, Maine and Lt. Col. John F. Brown, New Hampshire; II. Lt. Col. Stuart C. Welch, New York, and Lt. Col. Carroll D. Smith, New Jersey; III. Lt. Col. William L. Anderson, Pennsylvania, and Lt. Col. Arthur C. Hyde, Maryland; IV. Lt. Col. Dexter C. Martin, South Carolina, and Lt. Col. Frank Dawson, North Carolina; V. Lt. Col. George A. Stone, Ohio, and Maj. William S. Rhinehart, Kentucky; VI. Lt. Col. Ray H. Baker, Michigan, and Lt. Col. John F. Stratton, Wisconsin; VII. Lt. Col. Harry B. Sidles, Nebraska, and Lt. Col. Don C. Johnston, Iowa; VIII. Lt. Col. Moss Patterson, Oklahoma, and Lt. Col. Richard G. Jones, Louisiana, and IX. Lt. Col. Bertrand Rhine, California, and Maj. Leverett Davis, Idaho.

These Wing Commanders, as directors, have selected the following to represent the CAP on the League's executive committee: Lt. Col. John F. Brown, New Hampshire; Lt. Col. William L. Anderson, Pennsylvania, and Lt. Col. Moss Patterson, Oklahoma.

In addition, each state is authorized to organize a board, executive committee and advisors, paralleling the national set-up, to coordinate activities more closely.

Because of the importance of the meeting in New York where the above steps were taken, SOUTHERN FLIGHT revised its CAP news content this month to publish a review of the meeting by one of the Wing Commanders attending it (see adjoining column).

North Carolina Aviation Week Set for August 14-20

The Civil Air Patrol will play a major role in the observance of North Carolina Aviation Week at Charlotte August 14-20, with highlights being a planning conference on August 16 and a North Carolina Wing assembly on August 19-20. Chairman Tom Beck of the CAP League has been scheduled for a speech, and Maj. Gen. Robert W. Harper, aide to General H. H. Arnold, chief of the Army Air Forces, has accepted an invitation to attend. The CAP assembly will be attended by CAA representatives and 2,500 CAP cadets.

In addition, plans call for aircraft and accessory exhibits, an Army and Navy air show, CAP and CAP Cadet competitions, and other specialties. The planning conference will include a session for city commissioners, Chamber of Commerce aviation members and commissioners, and others interested in postwar aviation and airport planning. Leading authorities are being invited to participate, according to Hugh A. Deadwyler, planning chairman.

By T. B. ROBERTS, JR., LT. COL., CAP,
South Dakota Wing Commander

The Wing Commanders of the Civil Air Patrol were again called into New York to the National Headquarters late in June for a further conference on the Civil Air Patrol League. The confusion which had resulted from the announcement of the organization of the League sixty days ago was rampant, not alone with the personnel of the Patrol, but in the minds of the Wing Commanders to whom it had been explained, and there yet existed a mentally woozy condition, leaving them lukewarm, unenthusiastic on the subject.

Probably we should analyze in a somewhat sketchy manner the reasoning that was going on down in the grass roots, and then it may be possible for us to formulate conclusions and finally arrive at what was drawn or developed as the result of this meeting.

The certificate of incorporation of the League set out as one of its purposes "To buy, sell, lease, own, mortgage lands and to construct buildings, lease and maintain offices, and aviation fields necessary and requisite to carry on the purposes of this Corporation." Now obviously only a lawyer would know that such a statement was only made to give the certificate of incorporation scope. But if it was going to take the time of all of Philadelphia's lawyers to explain the features of incorporation, how by any stretch of the imagination was it going to be possible to accomplish it in time for the League to be of some value? Thousands of members of the Civil Air Patrol have asked if it was necessary to join the League in order to belong to the Patrol, and similar other questions such as operating airports. In other words, an effort had been made to make the purposes and objectives of the League so broad that aviation

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"Elementary Physics" has been recommended as a text book by the Director of Ground School at the Army Air Forces Pre-Flight School at Ellington Field, Texas, and the Bureau of Public Relations, War Department, Washington, D. C., have approved the publication of this book.

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in all its features might come within the program on a long-time basis, with no one able to say what the future held, this conception was important, but in that expansion it was defeating the very important features which were so essential at this time—namely, the training of aviation cadets.

Cart Before the Horse

It all was another instance where the idea behind the program was right, but the machinery by which it was set up was wrong. Then along about June 6th the information was given out that it was now appreciated that inadvertently the cart had been placed before the horse, and even if this had not been enough they got the horse in backward. The horse was apparently put in backward behind the cart, which was ahead of the horse, so that the horse's tail would not bring up the rear, so some one could twist it, and that isn't double talk. It looked just that bad, and "by golly" it was bad. It just isn't in the cards to start out to do something for anything, and not mention anything. Nor is it good policy to exclude anything from having a part to say in something—that is, if you expect the idea to work. Well, in so many words, that is what happened. We have made a lot of changes in the Constitution of the United States since the Liberty Bell was cracked, and in all probability we will make a lot more. In this instance, the Wing Commanders of the Civil Air Patrol suggested a lot of changes in the By-Laws of the Civil Air Patrol League, and as we understand it, there is opportunity for more if the desire is manifest and sufficiently backed.

The crux of these boiled down to fit limited space is:—The Civil Air Patrol is mentioned as being on the receiving end of the League gratuities, which is set out as one of the purposes of the League. That's simple—how any one overlooked it remained for a couple of western lawyers to divulge in a suave manner. It will be in when the new draft is made. The other vital point equally as simple, and which involved largely an arrangement of words was the matter of representation of the Civil Air Patrol on the Board of Directors of the League. Some one must have said, "Well, we can't put forty-eight state Wing Commanders of the Civil Air Patrol on the Board—it will be too unwieldy." "We might create twenty-one vacancies." Well, nuts—we don't even skin skunks that way out in South Dakota. There is a technique to the manner in which you skin a skunk. We don't start in with the tail, nor do we first sprinkle salt on the wounds. O.K.—My story, yes.

There are nine service commands of the Army in the United States, each service command is composed of a variable number of states, based upon population, but within the nine all forty-eight states are represented. Therefore, within each Service Command it will be a simple procedure for the Wing Commanders to select a representative on the Board. This will result in nine. Now the League is to use the same procedure only they are to select two representatives from the civilian personnel of their organization, which will give them eighteen. This then will give a total of twenty-seven to comprise the Board of the Civil Air Patrol League. The By-Laws will also provide the system of election and all the machinery, but that is not material. We have set out the important part—except that for the *first year* the League has made certain representations, which must be consummated so far as directors are concerned, and these total thirty-six. In order to balance partially the division the Wing Commanders have nominated two from each Service Command, which will make a total on the board of fifty-four if my arithmetic is correct.

To Feed Cadets at Army Bases

It does not seem necessary to explain the workings of the League. They will pretty generally explain that to the public—and to everyone. It does seem that it should be mentioned again that the AAF has asked the Civil Air Patrol to pre-flight 250,000 boys. In order to do this extensive and varied procedure must be gone through, involving a tremendous outlay of money. This the League will furnish to the Patrol. Right now the League is raising $67,500.00 to feed 9,000 cadets who will be sent to Army airports for instruction and training under Army instructors for ten days.

That is a fair indication of what Mr. Beck faces, and is ample reason if there was ever any doubt, just why we need Mr. Beck. I haven't yet seen anyone who wants his job, and when the Wing Commanders expressed their appreciation to Mr. Beck in a standing resolution we stood at our full six feet with shoulders back. The facts of the matter are the meeting got rather "dampish" toward the last. Right after we got through with Mr. Beck we made Colonel Johnson wipe off his chin whiskers. We forgave Col. Blee all his directives—we patronized all the way down the line of the Executive officers in National Headquarters, and I'm not so sure that if the gentleman from Arkansas, whom we discovered early in the proceeding, had finally offered a resolution to continue the war another year so that we could all get better acquainted, that it might have carried.

You probably have gathered that the cards were laid on the table—red shoulder loops were frequently mentioned without anyone getting sore, and most every training and operations directive discussed. No changes were made in these last but they were informatively discussed. There is a change in the method of wearing insignia, which is shortly to be issued.

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By TONY HAGMANN

Did you know we have seven airports in Dallas? We will give you the latest "what's what" at each . . . on account of the lack of space, can't give you the whole apple at one sitting. This month, White Rock and Hudson.

White Rock has a set of jam-up repair shops, nice landing strip and a graveled runway. They have T hangars chuck full of planes, and many citizens come out to fly. Jack Edwards, who buys parts for North American's proud flying beauties, had captured two cans of dope for his plane the day we were there, and was in fine fettle. His airplane "is going to look so pretty you'll want to pin it on." . . . Glen Allen and Ernest House were giving the once-over lightly to a beautiful gull-winged job. They are with Braniff, and said: "See him? He's a Braniff captain!" It was Lea Abbott who'd just purchased a Fairchild.

You can find Ed Slover at White Rock. He is instructing and E. C. Tunnell heads the repair shop . . . used to be at Hampton. And the sweet voice you hear over the phone belongs to Marianna Waters. She is the Queen of the Parts Department. Of course, "Pappy" Reeves, McWhirter and Curtis Parker you always will find there working, working, working . . . Everybody has fun at White Rock—they are so friendly.

We jeeped over to Hudson and partook of some very fine ham and cabbage at the "Better Beanery."

We asked Jimmy Pickett, dispatcher, to tell us something else. He said, "there are some dang good students here, too, you shouldn't forget . . . like Bill Ellis." So we said howdy to Bill, who is from North Carolina. He used to fly at Hickory in N. C., and said they got SOUTHERN FLIGHT each month, and would we say "hello" to Johnny Terrell for him. Then we sailed away in our jumping jeep, leaving this bee hive to the beavers.

Bryan, Texas, by Madge Wallace . . . Things have been buzzin', couzin, at Coulter Field this month. C. H. Hammock has rejoined the staff of Cardwell Flight Academy as Flight Instructor; W. H. Anderson completed tests for his A & E; A. A. Barnes from Stuttgart, Arkansas, is doing charter work; and A. G. Johnson has his (P for putt-putt) P-40 newly recovered . . . by Cardwell, of course. Honestly, it's a Cub with forty horses.

Mrs. Alice Fuchs, Ft. Worth, came down for a short stay. Her husband is taking the Instrument course at Bryan AAF. She is working for her own instructor's rating . . . Solo students of Dwight V. Johnson and J. M. Jarnigan, who are doing fine include: Guy Sims, Mrs. E. E. Vezy, Jr., Bill Inman and Donald Curtis. C. W. Carter took Andrew Price, Jr., over the hurdles . . . J. M. Jernigan dusted us with grass seed this spring . . . showing lovely results . . . Drop in and see us.

Kansas City, with Marion Melcher . . . When you're not stunting and you fly under three bridges within five miles of a take-off, you're apt to be called "Old Three Bridges" . . . or so Harvey Brooks, employed by Toth Flying Service at the Municipal Airport found out! Brooks was test-hopping. The en-

(Continued on page 70)

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PORTS OF CALL

(Continued from page 68)

gine of the lightplane began "revving down" just as he neared the Missouri River—which licks the dikes of the Municipal Airport as it is. So . . . under the Hannibal bridge went Brooks. The A-S-B bridge is almost parallel . . . so swish, under this went Brooks. Straight down the river he flew but he couldn't go over the Milwaukee bridge . . . flew under it . . . and finally landed safely in an open place a short distance from that!

The Missouri Aviation Trades Association met in Columbia, Missouri, on June 9th. Kansas Citians who attended were James N. Thompson and Rayburn E. Moore of Missouri Aviation Corporation; Edgar F. Smith, Jr., who operates his own flying school on Municipal Airport; Charles E. Toth of the Toth Flying Service.

The Kansas City Unit of the Women's National Aeronautical Association held a mock Graduation Exercise, complete with caps and gowns, at their June dinner meeting. "Prof." Vinita Bruns of Mid-Continent Airlines was in charge of the ceremonies. Among the new "students" are included Pat Gordon, who leaves for WASP training at Sweetwater, Texas, on August 7th. Another star has been added to the Service Flag of the Unit with the joining of Lt. Mary Helen Eblen.

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